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J. A. SMITH, President and Treasurer, Chicago
R. C. RENO, Vice-President and Editor, Chicago
D. WEINER, Secretary, Chicago
HAROLD L. BEYER, Vice-President, Chicago
C. L. JONES, Vice-President, Athen, Ohio
F. A. BOWDLE, Vice-President, Wheaton, Ill.

Eastern Representative, H. S. DURLAND, 63 Hinsdale Pl., Newark, N. J., Telephone BRanchbrook 3-2217

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The Telephone Business As We See It

Announcing Our New Cover

With this issue, TELEPHONE ENGINEER appears with a new modernized cover design, completely restyled and one which directly ties up with the telephone industry.

The title line has been made smaller in order to give space for the illustration in the upper right hand corner, picturing a telephone manager and a telephone lineman talking over telephone problems and their solutions in order to give their public efficient service "first, last and all the time." The illustration is also symbolic of the complete coverage of TELEPHONE ENGINEER, which is widely read by managers, commercial and technical men.

The design along the borders on the front and back outside covers emphasizes the valuable service rendered by telephone men in supplying a rapid and efficient communication system to every point in this country and the world, whether the point be the smallest isolated village or the largest and most populated metropolis.

The cover was designed by John McKee, well-

known Chicago artist, who specializes in trade paper designing and who has produced covers for a number of leading trade publications.

The color of the cover has been made a deeper and richer red, which displays the new attractive design to best advantage.

These changes in cover follow the drastic change in inside typography made in the April issue of TELEPHONE ENGINEER.

In that issue the type and style of headings were modernized and changed to meet the present trend in trade paper designing.

We take great pleasure in giving telephone men a modern and up-to-date telephone trade journal, which gives information and data on subjects dealing with every phase of telephone business in an attractive, interesting and educational manner.

* * * *

TELEPHONE ENGINEER is happy to say that it is "doing its part" by endorsing the President's National Recovery Program.

* * * *

Government Ownership Arthur Brisbane, noted newspaper columnist and long considered an advocate of government ownership, now apparently is convinced that privately owned utilities give the best service. Recently he admitted that private utility companies are more considerate of consumers' needs, more progressive in keeping their facilities ahead of requirements, more active in developing new comforts for the public, more dependable when it comes to providing complete service. Brisbane made this admission in the editorial column he writes for the Hearst newspapers and hundreds of other dailies. His article was prompted by the fact that the Russian government, which owns the electric business and everything else, has cut domestic service in half in Moscow in order to supply power to industry. The order suggested that householders use smaller lamps and discontinue use of electric heaters and other appliances. Brisbane could not help contrasting that situation with conditions in this country, where, thanks to private enterprise, industries and homes have more than enough power for all their needs. "Private power companies in America," he wrote, "do all they can to increase consumption, developing and advertising electrical devices to lighten housework—washing machines, vacuum cleaners, irons, etc. Perhaps our system is better on the whole."

Telephone men who are faced with agitation for municipal owned utilities might well send this information to their subscribers and others in a letter or circular and also have it published in their local newspapers.

A Good Comparison Probably TELEPHONE ENGINEER is not the place for a Bible story, however, the telephone industry is made up mainly of Christian organizations and a comparison of Gideon's Band of 300 selected men who effected the fall of Jerico, a strongly fortified city of the Midianites who were oppressing the children of Israel, with ourselves would be most interesting.

The story of Gideon's Band is a wonderful lesson of faith and it is the type of faith which every telephone employee needs.

Faith and more faith in his company, its policies, its products and in himself is needed by every telephone employee if he is to succeed with his company. If he honestly believes in his company, its policies and products and, every employee should, nothing could prevent his pressing on to heights he never dreamed of.

We are quoting William H. Ridgway of Coatesville, Pa., who is well known in business and religious circles. Mr. Ridgway firmly believes that the strongest and most successful business organizations are composed of Christian men and women. Of the Gideons, Mr. Ridgway says:

"When you see a man with a little white pitcher on the lapel of his coat you are safe in stepping right up to him and saying, Hello, Gideon! You receive a smile in return for this salutation. If you should be a woman traveling alone and there is a man on board wearing that little pitcher you can feel that you are safely chaperoned. You are in the company of a Christian traveling man. Yes, a godly drummer if you please."

Mr. Ridgway says further:

"I was asked to come to New Brunswick to address a convention of the Gideons of New Jersey and gave them one of my best talks. On my way home that night in my automobile I kept myself awake by laughing my eyes open at what the convention disclosed. Those Gideons were not 'traveling men' or 'drummers' at all; they were Presidents, Vice Presidents, Secretaries, Treasurers, General Managers, Sales Agents and all sorts of 'higher ups' including a Judge.

"These were the swivel chair Gideons who could get away for a convention. Yes, you have guessed it. The Christian Traveling Men had walked right up the business to the high places. The real travelers who had not yet made the office, were out on the road working the trade for orders. Those worthy will be found at future conventions."

Telephone employees who have faith in their God, in their industry, and in themselves cannot but succeed if they will combine this faith with honest effort.

TELEPHONE OPERATING CODE DRAFTED

AS THIS issue of TELEPHONE ENGINEER goes to press the National Recovery Act Code of Fair Competition for Independent operating telephone companies is being prepared in its final form for presentation to the National Recovery Administration in Washington, Friday, August 18.

The telephone code is identical to the President's Blanket Code with the exception of several paragraphs referring to wages and hours of labor, which have been changed to meet conditions in the telephone industry. In a letter dated August 15th, President F. B. MacKinnon of the United States Telephone Association told of activities up to that date. Mr. MacKinnon's letter reads:

"On July 27 and again on August 7 we wrote you regarding the procedure being followed by the Association in connection with the drafting of a Code for our members, certain sections of which might be substituted for paragraphs or provisions of the President's Agreement. In our letter of the 7th we stated our Executive Committee had completed a tentative draft of a Code. This draft was submitted to the Administration at Washington but changes in the regulations of the Administration as to what can be substituted necessitated amendments. Therefore, the Executive Committee met again on August 11th. It was agreed that every telephone company has three choices:

(1) Sign the President's Agreement "as is."

(2) Sign a substitute agreement (code).

(3) Sign nothing—maintain present hours and wages.

"Which one of these choices he makes must depend on his own inclination or the pressure of public sentiment in the community where he operates. There is no legal compulsion. We are still of the opinion that the National Recovery Act does not apply to telephone companies. Our position on this question has been strengthened by a letter written by an official of the Administration to one of the State Commissions in reply to an inquiry. In this letter it was stated that under the Act telephone companies are exempt; but if they sign the President's Agreement (which is voluntary) they agree to be subject to the provisions of the Act.

"Paragraph 13 of the President's Agreement provides that a substitute agreement may be adopted by the Trade Association of an industry which can be used in place of the President's Agreement. In this substitute agreement only those parts of the President's Agreement referring to wages and hours may be changed.

"Believing that few of our members can sign and comply with the President's Agreement "as is," the Association has prepared such a substitute agreement in the form of a Code, a copy of which we enclose.

"This Code proposed by the Association follows the lines of the Code submitted by the Bell Companies August 11, and approved by the Administrator. The essential differences are in the wage and hour schedules so as to meet the necessities of our many small exchanges.

"Acting under Paragraph 13 of the President's Agreement, the Association proposes to substitute Sections 4, 5, 6, 7 and 8 of the enclosed Code for Paragraphs 2, 3, 4, 5 and 6 of the President's Agreement. So in considering the Agreement at this time, read it as thus amended. If this Code and these substitutions are accepted by the Administration, then our members may sign the President's Agreement as amended, file a Certificate of Compliance and be entitled to have the Blue Eagle.

"Thus the Association is providing its members with an opportunity for the second choice. No doubt everyone wants to do his part in the Recovery Program. This question is how far can he go without seriously crippling his business.

"You are familiar with the terms of the President's Agreement—maximum of 40 hours per week, etc.

"You can read our substitute.

"What is your choice?

"The Association is working to arrange for its members this substitute to the Agreement that will enable them more readily to participate in the Recovery Program. No member will be obliged to sign the Association's substitute Agreement. He must do so by choice. The Association provides the way and will carry on for him in connection with the Code if he becomes a party to it. The Association will, of course, carry on also for those companies that decide they cannot sign either agreement.

"Please give the Code and these questions your immediate consideration and telegraph us at 19 South La Salle Street, Chicago, whether you will accept the Association's Code (substitute agreement) if it be filed with and approved by the Administrator."

Members of the National Association are requested to reply to the last paragraph of Mr. MacKinnon's letter immediately.

In regards to signing the President's Blanket Agreement, it has been pointed out that telephone operating companies may do this, but by so doing they are obligated to obey the agreement in all respects. They may discontinue the Blanket Code by signing a substitute code for the industry which has been approved by the adminstrator.

To operate under the President's Blanket Code one must sign the code and a certificate stating that he is complying with the code in every respect. The codes and certificates are obtainable at local post offices. This entitles one to receive the "Blue Eagle" stickers and other advertising material.

Questions as to the procedure followed in adopting the industry code (after its approval at Washington) after one has signed the President's agreement, has been raised in many quarters.

The answer is this. If a telephone company signs the President's agreement and it later desires to adopt the industry code, all it has to do is to sign the President's agreement amended with a clause stating that the industry code is a substitution for the Blanket Code and that it has been approved by the Administration. Also a certificate of compliance with a similar clause will have to be signed. The company is then recorded as working under the industry code.

Although telephone companies are desirous of doing their share in the Recovery Program, it is recommended by the National Association that they wait until the industry code has been approved before signing any code. When this code has been approved the National

Association will send out copies of it with certificates of compliance which managers may sign and present to local post offices or Recovery Act headquarters, which will entitle them to receive the "Blue Eagle" ensigna.

In order that telephone companies which are not members of the National Association may come under the industry code, the Executive Committee of that organization has issued an order that members of all State Associations automatically become members of the National Association without additional dues.

Companies which are not members of State Associations or the National Association may join their State Associations, and thus become associated with the National Association and be entitled to sign the industry code.

Member companies of State Associations will be kept informed as to National Recovery Act activities in the industry by their secretaries as they are cooperating closely with the National Association.

MANUFACTURERS DRAFT CODE

Representatives of ten concerns engaged in manufacturing telephone equipment and products met in Chicago, July 26 and formed the Telephone Manufacturers' Association for the purpose of preparing a code of fair competition under the terms of President's Roosevelt's National Recovery Act.

A code has been drawn up and has been submitted to Washington.

The officers of the Association are, president, George A. Scoville, Stromberg-Carlson Telephone Mfg: company, Rochester, N. Y.; vice-president, George A. Yanochowski, Kellogg Switchboard and Supply company, Chicago; secretary-treasurer, J. Mayo Lenz, Lenz Electric Mfg. company, Chicago.

In addition to the officers the directors include George W. Rodormer, Reliable Electric company, Chicago; F. R. McBerty, North Electric Mfg. company, Galion, Ohio; H. L. Gary, Automatic Electric company, Chicago, and O. M. Leich, Leich Electric company, Genoa, Ill.

American Electric company, Automatic Electric company, Cook Electric company, Kellogg Switchboard & Supply company, Lenz Electric Mfg. company, Reliable Electric company, Runzel Cord & Wire company, all of Chicago; Leich Electric company, Genoa, Ill.; North Electric Mfg. company, Galion, and Stromberg-Carlson Telephone Mfg. company, Rochester, N. Y., are charter members of the Association.

Invitations to join the association are given to all others manufacturing telephone products.

AGREE ON CODE FOR BELL

Agreement on a code for all operating units of the Bell Telephone System under the terms of the National Recovery Act was reached August 12 by officials of the National Recovery Act and the Bell company.

HELPS TRAP BANDITS; AWARDED MEDALS

For her part in apprehending the Young Brothers, gangsters who shot themselves to avoid capture in Houston after killing six police officers in Springfield, Mo., Jan. 2, 1932, Mrs. Lila Cook Caddy, telephone operator of the Three States Telephone company at Streetman, Texas, is one of three telephone workers who will be awarded silver Vail medals by the American Telephone and Telegraph company for outstanding public service during 1933, P. C. Cayton has announced. In April the Southwestern Bell Telephone company presented Mrs. Caddy with a bronze medal for the same feat.

On the afternoon following the shooting of the two deputy sheriffs and four detectives at Springfield, Mrs. Caddy was informed by a rural subscriber that two men had ditched an automobile near his farm and had refused his offers of assistance. Questioning the subscriber, Mrs. Caddy found the description of the two men tallied with that of the Young Brothers, heard over the radio the previous evening.

Busy at her switchboard, Mrs. Caddy had her son notify Springfield authorities of her suspicions. She also called the sheriff at Streetman, who in turn notified authorities at Houston, 200 miles away. Two days later the fugitives were located in Houston, and rather than submit to arrest, shot themselves.

ISSUES BOOKLET

"Telephone Facts" is the name of a booklet published by the Pacific Telephone & Telegraph company, outlining operating problems confronting utility.

About 92 per cent of the 32,500,000 telephones in the world can be connected with any Bell System telephone.

AMPLIFYING DEVICE INVENTED

Robert L. Parker, manager of the Geneseo (Ill.) Cooperative Telephone company, and Frank Fawcett, lineman, have invented a device to amplify the voices of operators in relaying messages of public interest to more than one rural or city line at a time.

The men have perfected an amplifier, utilizing the newest audio tubes, which they have installed behind one position in the back of the switchboard in the local telephone office. The amplifier is well located in relation to other positions on the board, being at the far end and easily reached by removing one panel on the back of the board.

It has been entirely shielded so that it in no manner interferes with the regular use of the balance of the positions on the switchboard. The amplifier will be used in building up the voice of an operator in the special transmission service which the exchange gives to advertisers or emergency announcements affecting the public.

WESTERN ELECTRIC SIGNS

Announcement was made in New York on August 7 that the Western Electric Co. had signed the President's reemployment agreement and will apply its provisions to all its 15,000 employes. The accompanying pay increase restores a 10 per cent cut made effective on April 1, the only cut made in base wages. Earnings of the workers, however, had also been reduced by shorter working periods, which remains in effect.

The increase for the company workers averages 11 per cent for all employes on an hourly rating and salaried employes up to $3,240 a year. The new rates date from August 1, it was announced, and the total increase in the company's payroll will be approximately $2,250,000 a year. About one-half of this pay roll increase, or $1,125,000, is in the Chicago area.

ILLINOIS CONVENTION

The 29th annual convention of the Illinois Telephone Association will be held at the Abraham Lincoln Hotel in Springfield, October 25 and 26.

The petition of 69 subscribers of the Footville (Wis.) Telephone company for rate reductions has been denied by the public service commission. The commission found that the rates were just and non-descriminating and that the company was operating at a deficit.

METHODIZING MAINTENANCE PRACTICES

Service Betterments Offset Reduced Value of Telephone Resulting from Loss of Stations — Systematizing Maintenance Work Reduces Operating Expense — Switchboard Cord Economy — Unique Testing Device Described.

By

T. DeWITT TALMAGE

Transmission Engineer

THE STORY any telephone man likes to hear these days is the one that shows the way to increased efficiency and worth-while savings. One of the most interesting lessons taught by stories that describe the striving to reduce maintenance costs is that the goal cannot be reached by entirely depending upon lowering of wages, and certainly not by skimping work, but rather by using improved methods.

It has been said that there never was a job so well done but that it could be better done. Certainly this truth has been proved, time and time again, during the past few years by the struggle of individuals to make their job assignments work out more smoothly. This article will describe some successful results worked out by employes themselves and developed from their own experiences of getting around Old Man Expense.

Tests Prevent Trouble

The story is told of an executive who, when things were moving along so smoothly that the operation of the company did not require his attention, always became suspicious and started looking around for signs of impending trouble. This sort of policy has been followed by telephone people to a great extent in maintenance work. They do not wait for a telephone to get out of order before they fix it. They carry on routine tests of equipment regularly in order to prevent trouble.

The records kept of these tests assist in indicating when a given piece of equipment is ready for replacement. By making repairs in advance of plant failures the deterioration of service is prevented.

Each new telephone sold increases the value of every other telephone. Conversely, every telephone disconnected reduces the potential value of our service to each remaining subscriber. In an effort to compensate for this reduced value of service resulting from the loss of telephones, some companies are furnishing a grade of service better than the community has ever before experienced. No matter how fine our product may be considered, there never was service so perfect but that it could be improved upon.

3 Service Qualities

In the mind of the average telephone subscriber, three of the most important qualities that good service consists of are: first, connections speedily completed; second, connections established accurately, and third—and equally important—conversations carried on with ease and clearness.

The speed of local service has been increased to a point where little more is left to be desired. The speed of intercity service (toll and long distance) has been greatly improved by the adoption of A-B and CLR operating methods. Our customers reach fewer wrong numbers because of improved training of the operators, closer supervision, and other advancements. However, the east of conversation or transmission quality is another matter.

At this point some harassed managers who are haunted by that spector-question, "Are we in business to spend money or make money?" may stop reading. Such individuals may rest assured right now that there is nothing in this discussion opposed to economy. Improving service does not necessarily mean increased operating costs. In many cases it means reduced operating costs and lengthening the effective life of the property. In any event, it meant only the intelligent and consistent attention to the business of getting the most out of what there is to work with.

Troubles in Batteries

A large proportion of transmission troubles originate in local battery plants. To improve the grade of service in these areas the transmission maintenance of magneto subscribers' loops and stations has received much attention. A simple and practical test for determining the transmission condition of such instruments and lines has been worked out as outlined in the July issue of the TELEPHONE ENGINEER.

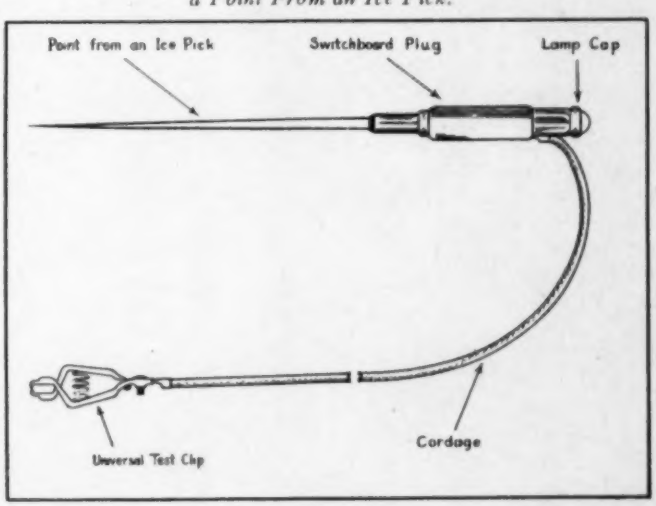
This service test makes use of a test pad causing a transmission loss of about 20 db. Such a testing unit is quite inexpensive. This pad is used for making transmission talking tests between the central office and the subscriber's instrument. Unsatisfactory stations can be quickly weeded out by means of this plan which is an essential part of all completely-balanced maintenance programs.

Planning Service Tests

Planning and organizing work to save time and money is very necessary but it is not practiced as much as it is preached. Assuming that other things remain equal, every dollar that you save on a job means that more service can be furnished for the same price to the customer. Such planning makes your company's service a bigger, better thing, and it makes you a bigger, better job.

One simple plan of scheduling telephones for the periodic transmission talking test previously mentioned, is to spread the telephones to be tested over a period of a complete cycle of tests. For

Fig. 1. Ingenious Continuity Tester Which Can be Easily Constructed from Spare Parts Found Around Central Office Plus a Point From an Ice Pick.



example, if all the stations are to be tested once each 90 days and there are 250 stations in the exchange area, the testing of 3 telephones each day would complete all service tests within the allotted time.

Another systematic plan for scheduling service tests of local battery telephones is based upon the average length of life of telephone dry cells. From studies made of past performances of dry cells, one company assumes that it will secure *at least* 12 months' service from a high-grade dry cell, with the possible exception of batteries used in certain business stations. All dates of the installation of dry cells are recorded on the wire chief's repair card or the subscriber's line and equipment record card.

Does Not Always Fit

It readily will be appreciated that the practice of permitting a telephone to go 12 months before an initial service test is made will not fit all stations. This period will probably vary between companies, depending upon the grade of dry cells used, the development of telephone usage in the community, and other inconstant factors.

Each month the file of cards of local battery stations is reviewed and all cards showing battery installation dates during that particular month in the previous year are noted and a list of the names and numbers of such telephones to be tested are written on a sheet captioned "Transmission Talking Test."

To facilitate locating the record cards of the stations that are due to be tested during the month, some companies make use of a helpful visible indexing system. This scheme uses steel file signals, which are small metal tabs, that can be easily slipped on and off the top of the record cards. This tab shows at a glance just what month the dry cells were installed.

Plan is Flexible

This visible indexing plan is quite flexible and two general methods are used in marking battery installation dates. One plan is based on the use of a projecting signal painted orange on which is printed in black the month in which the battery was put in that particular station. The objection to the projecting type of tab is that it interferes with the insertion and removal of the cards in the file.

The second method, which is preferred by a number of companies, makes use of a non-projecting file signal colored green for city stations and red for rural stations. The repair card used with the non-projecting tab has the calendar months of the year printed across the top of an ordinary trouble record card. The tab appearing in Fig. 2 is shown over the month of May. Since these tabs are staggered across the width of the file, they are easily distinguished and the cards involved in any particular month's test may be quickly withdrawn for examination.

On those stations where the initial service test is O. K., one company is making succeeding tests at quarterly intervals. The interval of three months was determined by studying past experience. However, trials are now going on to check this figure. It may be found later that a somewhat longer interval may be more desirable. On the record card shown in Fig. 2, is the first service test May was satisfactory, the metal tab

JAN. FEB. MAR. APRIL MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
INSTALLATION AND EQUIPMENT RECORD
Telephone No.
Name
Address
Kind of Service Installed 19 by Fac No.
Cable No. Pair No. Location of Box
Equipment Main Extension
Account No. Rate Remarks
Date Kind of Trouble Reported By Time Date Cleared Time By Kind of Trouble Found Init. C. R.
Form 11-7

Fig. 2. Improved Form of Repair Chart Especially Designed for Magneto Exchanges. Note File or Metal Tab slipped over Top of Card indicating Dry Cell Installation in the Month of May.

would be moved over three months to the month of August when another talking test would be made.

Cutting Back Cords

It has been the experience of some that a 6-month period is too long an interval after the first test has been made and they are now making quarterly tests following the first year the batteries have been in service. Succeeding tests are made at 90-day intervals until the tester observes a distinct falling off in the transmission volume when, of course, the dry cells are replaced and the card is so marked that no further tests will be made for a 12-month period.

Unless a repairman realizes the absolute necessity of carefully and frequently testing switchboard cords for noise and cutouts, he will foolishly spend many valuable hours trying in vain to locate faults on subscribers' lines and stations that were caused by that fruitful source of troubles, the switchboard cord.

The necessary frequency of making cord inspections may vary somewhat at different exchanges and the interval, therefore, should be varied to meet the local requirements. Perhaps an average period would be once each week. Such a schedule would make it possible to repair or replace all worn cords before they become so scratchy and noisy as to annoy subscribers.

Proper Equipment Essential

In order to get full value from cords it is customary to repair and cut back faulty cords as long as it is practical to do so. Cords may be cut back a number of times before they become too short to properly reach the jacks.

While cutting back switchboard cords is a simple task still, at the same time, it is slow work unless one is properly equipped to do it. The tools generally required consist of a pair of 6-inch long needle nose pliers, a pair of 5-inch narrow nosed oblique cutting pliers, a pair of scissors, and a small screwdriver. A roll of No. 30 tinned copper wire for wrapping around the tinsel strands and a spool of black thread for making tie bands completes the list of the most necessary items.

Probably the most tedious or difficult step in the whole process is attaching the terminal lug or cord tip to the stranded conductor. The quickest way to handle this part of the job is to use a pair of special two-step terminal-crimping pliers for placing terminals on tinsel cords, and the No. 31061 tin-plated brass cord tips. For those who are interested in economizing, a helpful 12-page booklet illustrated with 72 photographs is available which shows the complete series of steps in correctly cutting back cords.

Tools Often Handicap

Some individually-owned exchanges that have been in the habit of having their switchboard repair work handled by outside men are now, for the first time, permitting the local troublemen to do this work. In some cases he is successful but in other instances inexperience and the lack of necessary testing instruments and tools handicap him.

In one area a very ingenious and useful testing device is being used. This handy piece of testing equipment is shown in Fig. 1. Anyone who can use a knife, a file, and a soldering copper can easily make this "continuity tester." It is inexpensive and can be assembled from parts usually available in a central office plus a 6½-inch steel point from an ordinary ice pick.

While this instrument can be used for detecting certain classes of short-circuits, crosses, and grounds in cable and open wire, it is especially valuable around a

(*Continued on page 38*)

LIGHTNING--EFFECT ON PHONE SERVICE

By
HOWARD S. WARREN
Protection Development Engineer
American Tel. & Tel. Co.

Second and Last Installment.
Continued from July issue.

IN CONSIDERING the formation of electric changes in clouds, it is useful to employ the concept of the electric condenser. Essentially a condenser consists of two conductors, e.g., a pair of parallel metal plates, separated from each other by insulating material, which may be air. These two conductors form the electrodes of the condenser, and if connected to a battery or direct-current generator, become charged, i.e., negative ions pass to one electrode and positive ions to the other.

If the condenser has only small capacity, the migration of a relatively small number of ions, or in other words, the formation of relatively small charges on the electrodes, will make the potential difference between the electrodes, will make the potential difference between the electrodes equal to the voltage of the source of supply, at which time the flow of ions, i.e., the current, will cease. With a given condenser the number of ions which must migrate before the condenser is fully charged, is proportional to the voltage impressed upon it. If, however, too much voltage is impressed on the condenser, the air-gap or insulation between the two electrodes will break down, and there will be for an instant a violent rush of ions forming a spark channel through the insulation at the point of breakdown. This rush of ions quickly dissipates the charges and brings the two electrodes to the same potential.

In analogous fashion a cloud may be considered as constituting one electrode of a condenser, the earth beneath constituting the other electrode, the intervening air being the insulating material between these electrodes, or the electrodes may consist of two clouds or of different portions of the same cloud. This last case would not be possible if a cloud were a continuous conducting body like a piece of metal, but being an agglomeration of discrete moisture particles, with relatively large air spaces between them, it is possible for one part of a cloud to take on an excess of negative ions while another part of the same cloud assumes a deficit of negative, or an excess of positive, ions, i.e., one part of the cloud becomes charged negatively, and another part positively.

Formation of Charges

We may now consider a theory as to how electric charges in clouds may originate.

The absorption of energy from the sun's rays in different parts of the troposphere is not uniform, but is affected by several factors, one of which is the degree of humidity. The humidity in the atmosphere varies in turn from point to point, depending upon conditions as to precipitation and evaporation from water bodies. The absorption of heat from the sun by a given area on the earth's surface varies with the angular inclination of the sun's rays to the surface, the character of the surface, and with cloud and other atmospheric conditions. The radiation from the earth into the atmosphere is non-uniform because of variations in temperature and in surface conditions. For these various reasons there are at different points in the lower atmosphere, bodies of air of various sizes, shapes, temperatures, densities, and degrees of ionization. These bodies of air, acted upon by gravitational forces, are set in motion, resulting in the well-known phenomenon of winds. Winds at the earth's surface are predominantly in a horizontal direction, but it is important to note that in the cloud regions, air currents may have strong vertical components.

Thunder clouds are characteristically of the cumulus type, i.e., they resemble a pile of granular material. Their formation suggests strong local air currents directed vertically upward. Thunder storms commonly occur on hot, humid days. Vertical air currents mean that heated air masses near the earth are rising to the cooler upper regions. As lower temperatures are reached, particles of water condense from the water vapor. The water droplets so formed gradually coalesce until they become drops too big to be longer supported by the upward air current, when they start to fall. When the relative velocity of the falling water drops and the rising air current reaches about 25 or 30 feet per second, or whenever the drops encounter sudden gusts of wind, they become blown apart into fragments. The breaking up of the water drops produces, as already stated, positively charged moisture particles, and electrons either free or attached to the smaller water particles. The latter being lighter are carried upward by the rising air current and become attached to water droplets in the higher regions of the cloud. The heavier positive particles merge with water droplets in the lower portions of the cloud. Thus the lower part of the cloud becomes charged positively, the upper part negatively.

Charge to Earth

When the lower part of a cloud becomes charged, a charge of opposite polarity is induced on the earth's surface directly below. (The term "earth" should be understood to include objects on the earth's surface even though they are normally insulated.) If the cloud charge is positive, the charge on the earth's surface directly below the cloud will be negative, as the positive charge of the cloud attracts negative ions from more remote parts of the earth.

Just as the application of voltage (difference of potential) to a condenser, produces a charge on each electrode of the condenser, so the existence of electric charges of opposite polarity on the electrodes of a condenser, means that there is a difference of potential between the electrodes. If therefore, the lower part of a cloud is charged, and the earth's surface directly below the cloud is charged oppositely, there must be a difference of potential between the cloud and the earth. As a matter of fact the difference of potential between a thunder cloud and earth may be enormous. When such potential difference reaches a value higher than the intervening air can withstand, there is a breakdown of the insulating air and a lightning stroke occurs, which is nature's way of relieving the excessive stress.

If we should explore the potential variation along a vertical line between the bottom of a cloud and earth just prior to a lightning stroke, it would be found that the fall in potential through the air is not uniform. The gradient (potential drop per foot) would be found to have at some point, a value much greater than the average. Observations indicate that the maximum gradient usually occurs at some point in the lower fringes of the cloud, but this is not always the case. Also the more

intense the ionization at any point along the path between cloud and earth, the less the potential gradient required to start breakdown. When the gradient at any point becomes as much as about one million volts per foot (or less if the ionization is strong) a spark or streamer will be initiated, indicating incipient rupture of the air. This streamer, producing most intense local ionization as it advances, is the initial stage of a lightning stroke. It indicates a highly condensed stream of ions passing at enormous velocity through a narrow channel rendered incandescent by the heat generated. The course of the discharge is usually very irregular since it is determined by the distribution of ionization and gradients along various paths between the cloud charge and the earth charge. A stroke often divides into several branches, some of which may die out before reaching earth if the advancing ions meet a body of bound ions of opposite polarity or diffuse to form a space charge.

Thru Lightning Channel

In the simplest case of a lightning stroke to earth, half of the excess positive ions in the cloud pass to earth through the lightning channel, and conversely, half of the excess negative ions causing the earth charge, pass to the cloud, thus restoring equilibrium at least momentarily. The first transfer of ions between cloud and earth, however, is usually not just sufficient to neutralize the charges, and a second or third transfer may follow, i.e., several charges may occur in rapid succession through the same channel.

Myriads of separate water droplets in the cloud, have to give up individually their positive ions to the lightning channel, and likewise receive negative ions from the channel, a process which requires appreciable time. Thus due to the time required for discharge, assuming a given charge in the cloud-earth condenser, the current of the lightning stroke is smaller than it would be if conditions were such that the charges could be dissipated more quickly.

The foregoing attempts to picture roughly an ordinary cloud charge formation and dissipation, but it is not to be supposed that the actual event is always so simple. The turbulence of the atmospheric gases in thunder storms often results in violent upheavals of the cloud masses, with charges of polarity opposite to that described, so that a lightning stroke may represent dissipation of a negative cloud charge and a positive earth charge. The evidence as to the relative frequency of occurrence of positive and negative strokes is incomplete. Reports of laboratory tests with high voltage discharges between a metal sphere as a positive terminal and a grounded metal plate as a negative terminal, state that the stroke was found to start as a single stem from the positive pole and usually to split into several branches before reaching the negative pole. Such a discharge bears a striking resemblance to natural lightning from cloud to earth, which usually starts from the cloud as a single stem and forms ramifications before reaching the earth. This is consistent with the view that lightning usually results from a positive charge on the cloud. Other investigations of the polarity of lightning indicate that, while positive discharges from cloud to earth are more numerous than negative discharges, the latter are generally more severe. With either polarity it is believed that the discharge is usually initiated in or near the cloud. In rare cases the branching is towards the cloud, which may indicate a stroke initiated at the earth, but this is mere speculation.

Secondary Effects

When lightning strikes from one part of a cloud to another part, or from one cloud to another, potentials to earth may be set up by induction. Also a discharge between cloud and earth, produces secondary effects in the vicinity by induction. It was formerly supposed that induced voltages were an important cause of damage by lightning, but now it is believed that most injurious effects are caused by direct strokes.

Lightning strokes do not represent currents changing direction back and forth, but are non-oscillatory in character. The reason they behave like very high frequency discharges is that the lightning surge has a very steep wave front. Records of lightning surges by cathode ray oscillographs on power transmission lines show that the voltage rises to its maximum at the rate of from 10,000 to 15,000 kilovolts per microsecond (one millionth of a second). The voltage falls off much more slowly, requiring from 10 to 100 microseconds to decrease to half its maximum or crest value. If it were possible to make a record of a lightning surge wave front, without allowing the recording arrangement itself to affect the surge, the wave front would doubtless be found to be even steeper than these curves indicate.

Photographs taken with a rotating camera show that a lightning surge, which to the visual observer appears as a single flash, is really a sequence of surges following one another at intervals of from 1 to 10 thousandths of a second.

The effectiveness of a grounding connection to a lightning arrester is not indicated by its resistance to direct current or low frequency alternating current, but depends on its surge impedance. These two quantities, surge impedance and resistance, may differ widely, the former being largely determined by factors which do not affect the latter. For example, a coil of insulated wire spread out on the ground may, by reason of its capacity to earth, have a low surge impedance and constitute a good grounding connection for lightning, although being useles sas a grounding connection for such frequencies as are used for commercial purposes.

Energy of Lightning Stroke

During its brief duration, a lightning stroke develops enormous power. The potential of a typical stroke may be a hundred million volts and the current, 200,000 amperes, corresponding to perhaps twenty billion horsepower. If the duration of the surge is 50 microseconds, this would mean some 200 kwh. of energy. These figures are very rough and intended merely to indicate the order of magnitude. Fortunately an object struck by lightning receives only a small percentage of the total energy of the stroke, most of the energy being dissipated in other parts of the lightning path.

The area affected by a single lightning stroke, or by a single ramification in case of a branched stroke, is not large. Inductive effects at distances of 100 feet or more from the lightning channel are seldom severe enough to cause damage. Sometimes however, over ledgy or other high resistance formations, lightning will plow along the surface of the ground for a considerable distance before the charges are dissipated.

As auroras are also electrical manifestations in the atmosphere, it might be supposed that they have some relation to lightning. However, there is no apparent connection between the two phenomena. As stated above, lightning is confined to a zone within a few miles of the earth's surface, whereas the lowest parts of auroras are at an altitude of fifty miles or more. There is however, a very direct relation between auroras and earth currents and earth magnetism, indicating that the electrical influence, whatever it may be, of which the auroras high in the upper stratosphere are a visible manifestation, does penetrate the troposphere and doubtless affects it to some extent.

Methods of protection against lightning and the degree of success experienced in their practical application will be discussed in a later article.

—Bell Telephone Quarterly

HERE'S MORE ENCOURAGING NEWS FOR YOU

2,000 NEW TELEPHONES

Predicting an early return of business to normalcy, Frank Milhollan, president of the Central West Public Service company, announced at headquarters in Omaha recently that a 30-day sales campaign in Iowa and Minnesota communities served by his firm, had resulted in the installation of 2,000 new telephones.

"The success of this campaign has been our most concrete evidence that business is looking upward," said Mr. Milhollan.

The company provides telephone service to many Iowa and southern Minnesota towns.

MORE INSTALLATIONS

More telephones were installed in Chestertown, Ogden Dunes, and Kouts exchanges of the Northwestern Indiana Telephone company than were taken out. In Valpariso, Hobart, and Wheeler the losses continued to predominate. The summer trade in the north end and better farm prices at Kouts are given as the reasons for the pickup.

SANTA FE GAINS

Full effect of the depression which struck other parts of the state and nation were not felt in Santa Fe, New Mexico, according to E. C. Phillips, manager of the Mountain States Telephone and Telegraph company.

In addition, he said his company in June showed its first real pickup since the light setback since 1931.

While the loss in Santa Fe in telephones has been less than in other places, it has been steady, Phillips said. He estimated about 10 per cent loss for the two years.

For two months, the number of telephones has remained at about the same figure, he said. This month there has been an increase of about two per cent, the first increase in a period of about two years.

Long distance telephone calls two years ago were well above 200 but dropped to about 140 a day this year. There is an increase in this business now, he said. The heaviest loss of business was in this branch, he said.

The statement of American Telephone & Telegraph company covering operations for the quarter to June 30, showed another substantial net loss in the number of telephones operated by the Bell System.

As things are now running the loss will be well under the 509,000 telephones lost in the corresponding quarter of 1932 and probably somewhat below the 343,000-station loss for the first quarter of this year, though this would be much against the seasonal trend.

If business keeps up as it has been it is a fair guess that some time during the Fall the change from recurring losses to a net gain might occur.

Trend of station loss or gain does not directly determine earnings of the parent company which receives its income principally from dividends declared by some 22 operating companies.

With respect to the forthcoming earnings statement for the second quarter it is difficult to see how the period can show any great improvement over the first 1933 quarter results. Succeeding month's results ought to improve definitely if business keeps on as it has been.

For the quarter ended March 31, 1933, the American Telephone & Telegraph company reported net income of $32,055,227, or $1.72 a share on 18,662,275 shares of stock outstanding.

AKRON IMPROVES

A marker increase in long distance telephone calls during business hours the last three months was reported recently by N. R. Michell, district manager for the Ohio Bell Telephone company in Akron.

According to the report, the increase is 21.2 greater than during the first part of the year. Akron is averaging 20,325 outgoing and 20,371 incoming calls a week.

PICKUP IN NEW YORK

Disconnection of stations by the New York Telephone company, operating throughout New York state and a small part of Connecticut, during June amounted to 65,342 telephones, or 24,028 less than in the corresponding month of 1932. A net loss of 14,736 stations was reported which compares with 14,122 in preceding month and 35,964 in the 1932 month. During June 50,606 telephones were installed which is 2,801 less than in June, 1932.

TOLL INCREASES

A steady increase in long distance telephone calls has been recorded in the last two or three months, Paul Denning, district commercial manager for the Ohio Bell Telephone company at Toledo, said recently. Mr. Denning said that the average number of calls at present is 15 per cent greater than during the first part of the year. Toledo is averaging 21,000 outgoing and 30,000 incoming calls a week.

"This increase in long distance traffic has been notived by our company throughout its territory and nearly all of the increase has occurred during the regular business hours," Mr. Denning said.

GAIN IN INSTALLATIONS

There has been a small gain in number of telephones installed according to Victor Hansen, manager of the Wisconsin Bell Telephone company at Marinette. "The new business has swelled the total to 2240 and the outlook is very bright for the future," said Mr. Hansen.

"There is no construction work being planned for this year but the company has spent about $200,000 in Marinette in the last four years," said Hansen. Four years ago the underground work was completed at a cost of $78,000 and two years ago the Pine Beach and Pierce avenue lines were established. Last year a cable was built from tracks on Hall Ave. to the city limits.

DRIVE STARTED

Telephone companies all over Washington have started a drive to recover lost stations. Plans have been carefully laid, and employees in various lines upon whom will develop the task of solicitation have been drilled to present their proposal effectively. The greatest mortality has been among the farmers, and with better prices already heing secured and still higher price levels fairly assured by the plans the national government is putting into effect, many of these have already been reconnected. Telephone men say that with the great majority of farmers it has been a question of inability to pay. Corroboration of this is furnished by the fact that the purely mutual farm line companies have lost as heavily as the other companies.

MANAGERS WHO MADE BUSINESS

Despite the depression with its accompanying discouraging effects on the telephone operating business many companies have maintained consistent improvement programs which undoubtedly have helped them keep their station losses to a minimum.

Apparently the companies represented on these pages believe in the slogan "Improved service means more business" because judging from the reports they have improved their plants considerably during the past two years.

KEEPS MEN BUSY

Capital City Telephone company, Jefferson City, Mo., Houck McHenry, president, has carried on during the past several years without reducing its personnel at all. It has installed a considerable amount of new conduit and cable in the past year, which, together with the labor, run the cost to approximately $20,000 for new work.

CABLE, WIRE INSTALLED

Walden Telephone company, Walden, N. Y., H. Miller manager, has just finished installing approximately 10,000 feet of cable, has run new drop wire to every station in the towns of Walden and Wallkill, N. Y., and plans to change its equipment over to harmonic ringing.

In the past year this company has installed 15,938 feet of cable, put up approximately 70 miles of No. 104 copper wire, 125,000 feet of drop wire, two cars of poles and five links with 20 lines of equipment to remote controlled exchanges.

$70,000 SPENT

Richmond Home Telephone company, Richmond, Ind., under the supervision of V. D. Van Nuys, superintendent of construction, is at present expending the sum of $60,000 in the installation of underground cable in the city of Richmond, also under the supersion of Fred D. Bishop, superintendent, $10,000 is being expended in re-equipping toll board and in introducing of special devices. Air conditioning equipment is under consideration.

PROGRAM COMPLETED

Completion of an improvement program being carried out on the system of the Wisconsin Telephone company at Kaukauna, was made in June, according to Frank Guertz, manager of the exchange.

MOVES SWITCHBOARD

Farmers Telephone company, Ashton, Ill., George Schafer manager, moved its switchboard into a new location in its exchanges at Sublette, Ill., a few weeks ago.

5 MILES OF CABLE

Morrison Telephone company, Morrison, Ill., Ferd Trautwein manager. This company replaced about five miles of cable in its Fulton and Morrison exchanges in the past six months.

DOING FINE JOB

W. L. Cary, president and general manager of the Newark Telephone company, has done a fine job in keeping up his plant. He has spared no expense in keeping his plant in tip top order.

CONSISTENT REPAIRS

Peoples Mutual Telephone company, Pecatonica, Ill., R. J. Winchester, manager, rebuilt their entire cable plant in Pecatonica two years ago and last year replaced open wire leads with cable in their Davis exchange and now are rebuilding their distribution system in the exchange at Durand, Ill.

TO INSTALL NEW BOARD

Delhi Telephone company, Mrs. Mary B. Adee, manager, has installed new cable for the entire village of Delhi, will run new drop wire to all stations, and will install new Central Energy switchboard. Rebuilding of rural lines is to be begun in the near future.

SPENDING $20,000

Decatur County Telephone company, Greensburg, Ind., is now in quite an underground construction job. About seven years ago a portion of the Greensburg plant was placed underground. The present estimate, which covers about three-fourths of the town, will total $20,000 and consists in digging trenches and laying underground cable to the extent of 25,000 and 29 duct feet of one, two, and three-way conduit, and 45,891 linear feet of 10 to 300 pair lead covered cable. It is installing all new riser or lateral poles, together with subscribers' drop and block wiring.

In addition to the underground estimate, there has already been purchased and installed, principally to its outlying exchanges, No. 10 copper wire to the extent of 30,000 pounds. It has contracted for another 30,000 pounds, which will be put into the plant soon after the underground cable estimate is completed.

The Decatur County Independent Telephone company was organized and incorporated in 1900 and has continued its identity as such to the present time. The company attributes this to the fact that Greensburg is a town made up of a very progressive and industrious people and is surrounded by an excellent agricultural section with beautiful farms and farm homes. W. J. Scheidler is vice-president and general manager and B. Y. Chambers is manager.

NEW P.B.X.

Warrick Valley Telephone company, Warwich, N. Y., C. Ayers manager, installed new 50 line P. B. X. for State Reform School with telephones, and installed six miles of cable.

RURAL LINES REBUILT

Middleburg Telephone company, Middleburg, N. Y., E. S. Rose, manager, rebuilt 25 miles of rural lines.

$30,000 PROGRAM

Columbia and Rensselaer Telephone and Telegraph company, West Lebanon, N. Y., Robert Dean, manager, during the past two years, 1931-1932, spent more than $30,000 in rebuilding its telephone plant, added copper toll circuits, replaced iron toll circuits with copper, and replaced open wire with cable in the villages of Nassau, Canaan and Berlin, N. Y. During this period kept all of its men on, and at full time, it did not reduce wages. The employees went on a five day week on February 1st, 1933 and are still working on this basis.

AERIAL CABLE

Scircleville Telephone company, Scircleville, Ind., under the supervision of Arthur Batts has installed several miles of aerial cable near Scircleville. P. S. Barker is secretary and treasurer.

BY IMPROVING THEIR SERVICE

Many companies are embarking on improvement projects now, which, we believe, will result in more business for them.

TELEPHONE ENGINEER urges telephone companies, which are in a position to do so, to build up their plants and use the argument of "better service" to get more business.

We will welcome reports from any companies telling of improvements they have made during the past two years and those they are planning for the future.

REPLACES BOARDS

Ozark Central Telephone company, St. Louis, Mo., during 1930, 1931 and 1932 replaced magneto switchboards with common battery equipment at Union, Washington and Cabool, Missouri. During 1932 a complete new underground cable and distribution plant at Houston, Mo., were installed and many extensions and additions to lines were made in the territory around Bagnell Dam. T. L. Leonard is president.

UNDERGROUND CABLE

Ladoga Telephone company, Ladoga, Ind., under the supervision of Verne Bryan, plant manager, is installing several miles of underground cable in Ladoga.

TO SPEND $3,988,336

Bell Telephone company of Pennsylvania, has appropriated $3,988,336 for essential replacements to the company's plant facilities throughout Pennsylvania in the immediate future.

The appropriation brought the total for the year to date to $5,240,374.

Diamond State (Del.) Telephone company approved prospective disbursements totaling $146,215, bringing the total for necessary plant replacements in Delaware to $167,215 for the year to date.

CONTRACTS LET

The general contract for construction of Spirit Lake's new telephone building has been awarded to the Arthur H. Neuman and Brothers company of Des Moines, lowest bidders, according to D. C. Newell, manager of the Northwestern Bell Telephone company. Local help will be used as far as possible in all building work, the contractors state.

The new central office will be brick in a semi-residential style of architecture which the telephone company has found to be well suited for communities of this size.

Construction of the central office building is the first step in a $30,000 telephone improvement project which will change Spirit Lake's magneto telephone service to that of the more modern common battery type. It is believed that the new system will be ready for operation some time in October.

REVAMPS SWITCHBOARD

Oswego County Independent Telephone company, Fulton, N. Y., A. H. Shean, manager, and I. H. Griswold, president, is changing its entire switchboard from two conductor to three conductor cord circuit and revamp switchboard. In addition the company this year has placed 4000 feet of aerial cable, set 300 poles and strung 100 miles of wire. This finishes the work of re-cabling and rebuilding all lines, the work of which has been in progress for five years. All poles, both city and rural, have been replaced during this period, making the entire plant new and up-to-date.

NEW PHONE SERVICE

Nearly 200 young men are in the forest conservation corps camp at Brethren, Mich., on the north shore of Lake Elinor. The grounds are being leveled, tents erected, electric and telephone service established preparatory to the beginning of the forest work which will include building 115 miles of fire lines.

U. S. SIGNAL CORPS

The Signal Corps of the United States army have completed the installation of an entirely new telephone plant at Jefferson Barracks, Missouri. A new common battery board was installed in the central office and the entire outside plant was converted to an underground distribution system; with a 400 pair cable going into the central office and 36 outside cable terminals. The telephone plant at this post is now one of the finest in the United States.

NEW LINES

"Crescent Telephone company, Erie, Ill., Kirk Thompson manager. This company is building two miles of new lines to replace old ones."

NEW LINE PLANNED

The construction of a telephone line to Lake Sweetwater from Sweetwater, Texas, will begin at once, it has been decided by the City Commission.

The line will be a first class, individual, two-wire circuit, giving the same service as given in the city.

A contract was made with the Postal Telegraph company, to use their poles for the line to a point where the road leaves the old highway. From this point the city will contsruct a line to the lake keeper's house on the lake on poles cut from the lake property.

The estimate as submitted to the Commission totals $350.00.

NEW SYSTEM

Herman Ehinger, manager of the Citizens Telephone company, of Decatur, Ind., has announced that the company will spend $10,000 to improve the telephone system in Berne. The company will install an underground cable and install a complete new system.

COMPLETE WORK

Manager E. W. Neesen, J. D. Hamilton and Roy Davis of Tipton, Iowa, and Messrs. K. H. Stetson and Dan Carrol of Madison, Wisconsin, have finished the installation of the new switchboard in the Tipton telephone office.

NEW WIRES UP

The Southern Bell Telephone company has completed installation of new wires on its lines from Wilmington to Wrightsville Beach, N. C.

PROMOTED

Frank E. Congdon, Upper Montclair, N. J., has been appointed vice-president of the New Jersey Bell Telephone company, in charge of personnel and public relations, at the July meeting of the board of directors. Congdon, who was general plant manager of the company, is succeeded in that position by Frank F. Addicks of Westfield, N. J., formerly central division plant superintendent.

SOMETHING NEW IN EXTRAN

THE MELL-O-TONE TELEPHE

FOR the first time in telephone history, a telephone chime signal is available, for both public and private exchange use, that is both pleasing and distinctive in tone and thoroughly practical and effective in operation.

The Mell-O-Tone Telephone Chime, modelled after the Mello-O-Tone door chime, which has already won wide popular acceptance as a door signal, is especially adapted for use in homes, offices and other locations where a more pleasing and appropriate signal than the ordinary telephone ringer may be desired. It should, therefore, have a wide appeal to a large group of telephone users, and should provide a generous source of additional revenue for progressive telephone companies.

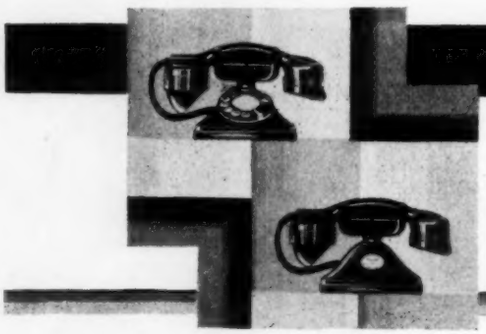
The New Mell-O-Tone Chime strikes a single, soft, musical note which is repeated at the beginning of each ringing period. The signal does not operate directly rrom the ringing current, but from a local low voltage circuit (either transformer or dry cells.) This circuit is closed at each ringing period by an A.C. relay, which is operated by the ringing current. For use on all types of telephone lines except harmonic party lines and lines using "long and short ring" codes. Available in any of the combinations shown below.

MELL-O-TONE TELEPHONE CHIME, MODEL TR — consists of a standard ringer case on the front cover of which is mounted the Mell-O-Tone Chime, with its resonator and solenoid. The base contains the A.C. relay and condenser and terminal strip but, of course, no ringer.

MELL-O-TONE TELEPHONE CHIME, MODEL TE—consists of a single chime mounted on a diamond-shape bakelite base—modern in design, beautiful in finish. Requires the use of the Type 32 Compact Relay Box.

MELL-O-TONE TELEPHONE CHIME, MODEL TD—consists of two separate chimes mounted on a bakelite base, the second chime being used as a door signal, or as a signal for a second telephone line. Both chimes operate from the same low-voltage circuit, and each telephone chime requires a type 32 Compact Relay Box.

MELL-O-TONE ACCESSORIES—Included with each chime is a 20-volt transformer. For details of Type 32 Relay Box used with Models TD and TE, see Catalog 4037.



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THE NEW DEAL--EFFECT ON TELEPHONE INDUSTRY

Judge Lindsey, Officer and Director of the Federal Land Bank of Houston and Chairman of the Board of the Peoples National Bank of Tyler, Texas, Gives Interesting Address at Texas Telephone Convention, June 14-15.

By
JUDGE S. A. LINDSEY
President
Gulf States Telephone Company

BY ALL evidence of time-tested economics, we had by the middle of last year reached a condition of adjustment for rising commodity prices which, of course, would be attended with revival of trade and industry.

We had successfully met the raids of foreign countries upon our gold supply, and we had an abundance of available cheap credit, together with low living costs. In the latter part of the year, we had considerable gold imports, in part due to funds lent abroad, and in part due to the world's rising gold supply. Thus there were here all of the fundamental ingredients which in time past have been followed by recovery of great magnitude.

To get recovery underway, there only remained the occurrence of something to catch and grip the imagination and sentiment of our people, causing them to take a sane view of conditions with renewed courage and confidence.

Optimism Aroused

The election of a new congress and a president of another political party upon a platform calling for amendment of the Volstead Act and the repeal of prohibition, while, perhaps, not sufficient within themselves to get recovery underway, there were thereby aroused a kind of expectancy and optimism. That which turned the trick was the opportunity afforded Mr. Roosevelt in the bank crisis at the very moment of his inauguration. The prompt, courageous and effective manner he displayed in dealing with that situation caught the imagination of the people, increased their expectation and optimism and restored a degree of confidence. That confidence had been recovered is evidenced by the return of more than one billion dollars to the banks, seven hundred million dollars of which was gold which had gone into and came out from hiding.

If the President and congress had done nothing beyond handling the bank situation as they did, thereby giving proof to the public that the banks which were permitted to re-open for business were safe and solvent, except to balance the budget by reductions in government expenses, supplemented by wise and just taxes to extent necessary, we would, in my judgment, be as far, if not further on the road to recovery than we are.

It is not my intention to imply a criticism of the further portion of the New Deal program, but to emphasize that the field was prepared for recovery and that recovery was already underway. It would be but natural for the people of this nation to hesitate during the further enactment by congress of the remaining portion of the program.

Consumption Important

By all the experience out of which economists discover principles, an abundance of cheap credit and low living costs are the seeds of recovery of industry and trade. Equilibrium of prices at low level is the genial soil in which these seeds germinate; for low level of prices makes for larger consumption. I wish here to stress the importance of consumption. There can be no increase of production without increase of consumption, and without increase of production, there can be no in crease in the employment of labor and capital.

I have said that there was an abundance of credit. During the period between 1929 and 1932, the banks had reduced their loans and investments by 12 billion dollars, so I assume that upon the resumption of industry and trade, the banks would be again able to supply that amount of additional credit. In the Reconstruction Finance Corporation there was a source of credit amounting to three and one-half billion dollars. The twelve intermediate credit banks could grant credit to the extent of one-half billion dollars. There is probably an equal amount in the Federal Land Banks, and there were also several other sources of government credit. To these, preparation has been made by authority granted to the President to add through the Federal Land Banks and the Home Loan Banks, two billions of dollars of credit each. In addition to these sources of credit, there is authority for the issuance of three billion dollars of bond secured money. I think I have omitted some of the provisions for credit and additional money, but these are enough, surely, to justify the assertion that if not then, now at least, there is an abundance of potential credit. That credit is cheap is evidenced by the rate of interest prevailing. Call money can be had at 1 per cent; bank acceptances bear one-half of one per cent; prime commercial paper, one and one-half per cent; the discount rate of Federal Reserve Bank of New York is two and one-half per cent. Here then we have an abundance of credit; credit is cheap and the living costs are low. Likewise, all prices are low enough to invite great consumption. Recovery is inevitable.

Labor Re-Employed

Even as I enumerate these conditions which I have denominated as seeds for business revival, and low level of prices as the soil in which they thrive, these seeds have already germinated. Wheat has risen 25 cents per bushel; cotton from $25 to $45 a bale; wool from eight cents to 27 cents per pound; hogs and cattle in proportion. As farm prices are swinging into equilibrium with prices generally industry gets underway. The operation of steel mills has risen from 14 per cent to 47 per cent capacity. The breweries are running day and night, employing three shifts of labor daily. This is a new industry and utilizes the products of farm and factory. Automotive works are turning out trucks and industrial locomotives. Mills and factories are re-lighting their fires. Labor is being re-employed.

Here is an apparent anomaly: little of this vast credit resource has been touched; only 85 million dollars of authorized new money has been put into circulation, while by the acts of the President and congress fully four billions of dollars (all of our gold) have been taken out of both actual

and potential circulation, and is not available to anyone for anything. These facts prove the claims of our soundest economists that it is the equilibrium between prices and the free exchange of goods and service, and not the abundance of money which leads in revival of and continues the activity in business and industry.

It is my guess and it is to be hoped that not one-tenth of this authorized government credit will be used, and that little of this bond secured money will ever be issued.

Confidence is Basis

I believe with many that none of us understands money. Ninety-eight per cent of business is done on credit. Confidence is the basis of credit. The annual turn-over in this nation is said to be 650 billion dollars yet at no time has our money stock exceeded 10 billions of dollars; and all of this was thought to be redeemable in gold, of which we had only three to four billion dollars. I can imagine this vast volume of business as an inverted pyramid, the apex of which is the few billion dollars of money upon which rests the credit employed in the 650 billion dollars annual business turnover.

Here is another proof that we do not understand money: The weight of a gold dollar is 25.8 grains, nine-tenths per cent fine. The amount of gold money in the United States for the last several years has been between three and four billion dollars, and yet during this time we have purchased bonds of government and corporations to the extent of fully 100 billion dollars in which bonds there is a provision that both principal and interest shall be paid in gold coin of the present weight and fineness. The truth about the matter is we base our confidence not in the gold but in the continued normal processes of business and industry. If, and only if, these continue can such bonds be paid in gold.

Money Small Factor

Yet money, especially gold money, plays a part—an important part. It can do more harm, however, by its absence than good by its presence. However, money plays but a small part in the exchange of commodities. Commodities are produced, goods fabricated and moved to and through the market on credit which is never disturbed so long as the equilibrium between the prices of commodities and services is not disturbed and destroyed. When something happens to upset the free flow of commerce and the exchange of goods and service, like tariff or artificial upping of some prices, while others are permitted to lag and drag, commerce and exchange of goods and services cease, and surpluses of commodities, goods and labor accumulate and the whole order of trade and industry are thrown out of gear. In addition, credit tightens, prices fall, and we have depression, until adjustments again take place. Greedy upping of prices whether by tariffs, combines, or unions, sow the "dragon's teeth" which destroy prosperity in the midst of plenty.

Do Not Think Straight

In times of depression, people do not think straight. They forget the cause which is the disturbance of the equilibrium between the prices of service, goods and commodities. Some will say there is over production and machinery is to blame; others that we need more money and others that we should have more and cheaper credit, still others say that the capitalistic system is a failure. I believe with that school of economists who maintain that the capitalistic price system is not threatened; that the wants of man are insatiable; that the machine is a blessing; that temporary overproduction leads inevitably to an eventual increase in consumption and that the consumer is benefitted by low prices.

I believe, and hope that I may not fail to impress you, that under conditions existing with the great resources at command, we are not dependent upon the New Deal for revival of trade and industry. At the same time, I wish not to minimize such impetus and aid as may flow from the program of the President which should quicken and extend recovery by maintaining equilibrium of prices.

Not Un-American

At one time I thought that much of the New Deal was un-American. When I recall that Mr. Roosevelt, during his campaign, speaking before the Commonwealth Club, said, in substance, that the age of exploitation and conquest in America was over; that the age of intelligent administration of our National Plant had come; that buccaneering promoters were anachronism; that princes of properties must assume the responsibility that goes with the power; that he hoped that business could organize and control itself; that government should assume the responsibility of economic regulation only as a last resort; and that as to capitalism, he said there has yet been no break down of private initiative, because, as yet, there has been no attempt to reduce our present system to order; and recalling that some days after, in his speech at Madison Square Garden, Mr. Hoover made a campaign issue of the New Deal when he said that the issue between him and Mr. Roosevelt was more than a contest between candidates and political parties; that it was a contest between two theories of the functions of government; and recalling further that the people of this nation not only decided in favor of the New Deal program, but broke party lines to do so, I must confess that the New Deal is not un-American.

This New Deal, as I understand it, is the mobilization of the credit and financial strength of this nation, under privilege of volunteer cooperation of groups engaged in similar ad allied lines of business and industry, in attack upon depression and unemployment of both labor and capital. Such cooperation, to make it effective, is to be supervised by authority of government. When cooperation is not voluntarily initiated, it will be, by the government, enforced upon the disinclined. Such united attack should be irresistible and speed results.

U. S. in Good Position

The underlying purpose of the program constituting the New Deal extends further than the mere revival of business and industry. The purpose is to hold what progress we as a people and nation have made in the things of civilization and the position of leadership among the nations of the world which we have attained. We have not only become the leading credit nation of the world, but our equipment for production exceeds that of any other nation. No nation possesses more of the blessings of civilization nor so high standard of living as ours.

If we are able to peg and hold our present advance, we shall maintain our leadership and be able to employ it toward peace and the advancement of civilization among other nations. Thereby we may fulfill a destiny of usefulness to mankind generally.

I must admit that thus far appreciation of our attempts to aid other nations has been in some quarters lacking. Our generosity in lending, with the poor appreciation shown for the favor, would indicate that we have much to learn in the matter of dealing with other nations and the peoples of other nations.

Stupid Money

An economist and writer once said "At particular times, a great many stupid people have a great deal of stupid money. This blind capital seeks someone to devour it, and there is plethora. It finds someone, and there

(*Continued on page* 34)

FAITH IN FUTURE SHOWN AT CONVENTION

REPORTS of improvement in the telephone business were one of the features of the 37th annual convention of the United States Independent Telephone Association, July 11-14, at Stevens Hotel, Chicago.

It was reported that station losses are decreasing and toll business is increasing, and that in most quarters the future looks bright.

President F. B. MacKinnon called the first session to order at 10 A. M., Tuesday, July 11. Following a few introductory remarks and a word of welcome he called upon Secretary-Treasurer Charles C. Deering, Des Moines, Ia., for his report.

In Good Shape

Mr. Deering reported receipts and disbursements from January 1, 1932, to January 1, 1933, and also for the first six months of 1933. He stated that the association's financial condition was good. The total membership now numbers 453.

Following Mr. Deering's report, Mr. MacKinnon introduced W. G. Brorein, Tampa, Fla., and J. R. Forbes, Waterford, Ontario, Canada, as representing the extreme south and north of those attending the convention.

Alfred L. Geiger, Washington, D. C., general attorney of the association, gave a report of activities in Washington. Mr. Geiger explained the different proposed and passed legislation affecting telephone companies.

Invited to Fair

Captain J. W. Gorby, member of the A Century of Progress staff, then welcomed telephone men to the Fair and to the city of Chicago.

At this point Dr. Sergius P. Grace, executive vice-president of the American Telephone and Telegraph company and in charge of that company's exhibit at the Fair described the Bell System display and invited delegates to visit it.

H. M. MacMeal, Chicago, then was called upon to tell about his plans for "A History of Independent Telephony" which he is now preparing. (Details of this history will be published in the September issue of TELEPHONE ENGINEER.)

President's Address

Following a number of announcements, President MacKinnon gave his annual address included in which were discussions of today's telephone problems, namely: Preparation for new business, securing subscribers, rate structures, public relations, educating employees as to the policies and position of the telephone company, and assuring a permanent source of income for employees.

After concluding his address, President MacKinnon read the names of directors whose terms had expired and appointed a nominating committee composed of W. H. Bryant, Mobile, Ala., chairman; Foster McHenry, Jefferson City, Mo., and W. E. Bell, Lincoln, Nebr.

Directors whose terms had expired are: J. P. Boylan, Rochester, N. Y.; Geo. X. Cannon, Freeport, Ill.; L. S. Gardner, Waco, Texas; W. F. Goodrich, LaCrosse, Wis.; H. L. Harris, Chicago, Ill.; C. L. Jones, Athens, Ohio; Frank A. Knapp, Bellevue, Ohio; G. W. Robinson, St. Paul, Minn.; K. B. Schotte, Kittanning, Pa.; R. B. Still, Portsmouth, Ohio, and A. Wardman, Whittier Calif. A vacancy on the board caused by the death of Hart F. Farwell, of Terre Haute, Ind., he stated was also to be filled.

Hastie Speaks

Wednesday mornings session was opened at 10 a. m.

The death of Harold L. Beyer Chicago, vice-president of Telephone Engineer Publishing company, a former director of the association, a past president of the Independent Pioneer Telephone Association, and a past president of the Iowa Independent Telephone Association. Upon motion, Secretary Deering was instructed to convey to Mrs. Beyer the sympathy of the Independent group and that in Mr. Beyer's passing the industry has lost a valuable member.

John R. Hastie, Chicago insurance advisor, was the first speaker and discussed "A Group Plan for Annuities for Independent Telephone Employees."

Mr. Hastie outlined the value of an annuity plan for Independent telephone companies by which employes may be retired when they have reached a certain age.

Station Costs

The next speaker was I. J. DeVoe, general auditor, Lincoln Telephone and Telegraph company, Lincoln, Nebr., who addressed the convention on the subject, "Finding the Cost of Serving Service Station Subscribers."

At the conclusion of Mr. DeVoe's address, two pioneer telephone men were introduced: Alpheus Hoover, Markham, Ontario, Canada, and Frank L. Beam, Mt. Vernon, O., 35 and 39 years, respectively, in the business.

E. R. Hannibal, vice president and general manager, West Coast Telephone company, Everett, Wash., was the last speaker on the program. He spoke on "What Is Wrong With Our Public Relations?"

Mr. Hannibal stated that the industry has developed equipment in advance of the needs of the times, but had somewhat lost sight of the human side of relations with the public. Steps which management can take in overcoming the various defects in operating, the speaker said, can be classed under two general heads: Organization and public education. He continued:

"Genuine courtesy should be instilled in all employes. It has been my observation that public relations are best where employes have been taught their responsibility to the public; and where employes have a general idea of all branches of the business and not merely the particular class of work in which their job places them. They should have the general 'feel' of the business.

Mr. Hannibal advocated the use of newspaper advertising, as well as the use of bill inserts and advertising on envelopes, to keep before the public the fact that "we are performing an extremely valuable servic to it at a fair cost."

State Officials Meet

Following Mr. Hannibal's address officials and directors of State Associations met and discussed telephone problems. President MacKinnon recommended that they act on the subjects discussed at the national convention.

The first business of the Thursday morning session was the report of the nominating committee, which was given by its chairman, Mr. Bryant. Those directors nominated to succeed themselves were:

John P. Boylan, Rochester, N. Y.; George X. Cannon, Freeport, Ill.; L. S. Gardner, Waco, Texas; W. F. Goodrich, LaCrosse, Wis.; H. L. Harris, Chicago; C. L. Jones, Athens, Ohio; Frank A. Knapp, Bellevue, Ohio; W. Roy McCanne, Rochester, N. Y.; K. B. Schotte, Kittaning, Pa., and A. Wardman, Whittier, Calif.

P. M. Ferguson, Mankato, Minn., was named to succeed G. W. Robinson of St. Paul; Frank E. Bohn, Ft. Wayne, Ind., to fill the vacancy caused by the death of Hart F. Farwell of Terre

(*Continued on page 27*)

LINE and DESK

W. C. Dillon, Editor

Give a method for testing tin coating on copper wire, one that is universally recognized.

A recognized test for the continuity of the tin coating on copper wire is determined by the sodium-polysulfide method, which shall be applied as specified in the following paragraphs:

Pieces approximately six inches in length cut from the coil of wire to be tested, shall be thoroughly cleaned by immersion in benzine, redistilled petroleum ether, ether or carbon tetrachloride for at least three minutes, then removed and wiped dry with a clean, soft cloth, and kept in a dry cloth until tested. The part of the sample to be immersed in the test solution shall not be handled. Care should be taken to avoid abrasion by the cut ends.

Immersion of Samples

A length of at least 4½ inches of the cleaned sample shall be immersed, in accordance with the following cycles in the test solutions maintained at a temperature between sixty and seventy degrees Fahrenheit.

First: Immerse for one minute in HCI solution as hereinafter defined. Wash and wipe dry.

Second: Immerse for thirty seconds in sodium-polysulfide solution as hereinafter defined. Wash and wipe dry.

Third: Immerse for one minute in HCI solution. Wash and wipe dry.

Fourth: Immerse for thirty seconds in sodium-polysulfide solution. Wash and wipe dry.

After each immersion the samples shall be immediately and thoroughly washed in clean water and wiped dry with a clean, soft cloth.

Examination of Samples

After the above described operations, the samples shall be examined in order to ascertain if copper exposed through openings in the tin coating has been blackened by the action of the sodium-polysulfide. The sample shall be considered to have failed if by such blackening exposed copper is revealed. No attention shall be paid to blackening within ½ inch of the end.

Mechanical Test for Adhesion

A mechanical test for adhesion of tinning may be made by bending the wire around a rod having a diameter equal to four times the diameter of the wire, and dipping the bent portion of the wire in the sodium-polsulfide solution only, for thirty seconds. Any cracking or parting of the coating will be shown by blackening of the copper. Such cracking or parting will be cause for rejection.

Detail for making up the testing solutions of Hydrochloric Acid and Sodium-polysulfide as they should be compounded for making the above tests, will be furnished upon writing to the Editor.

What is a practicable way for the identification of a communication toll line circuit that is to be used by a crew foreman or troubleman in calling the office with a portable telephone?

In establishing uniform practice in designating or marking specified message telephone circuits to be contacted when calling in with a portable telephone, it is intended that the method of designating and marking prescribed shall apply to toll lines carrying a large number of wires and when the wires may frequently change pin positions. On a pole line carrying a few wires that maintain the same pin position throughout, this method of marking may not be warranted.

A three inch block aluminum letter "M" is used. The usual practice is to attach the letter on both sides of the cross arm of every fifth pole by means of No. 14 one-inch brass or galvanized nails and centered between the two wires of each circuit. Where transposition brackets interfere, the letters are placed on both sides of the crossarm on next adjacent pole in either direction.

What are the specifications covering the manufacture of 40-60 solder?

The 40-60 solder that is used in making wiped joints when splicing cables, consists of an alloy of tin and lead containing: A minimum percentage by weight of tin 39.75, normal 40, and lead, normal 60. Antimony, bismuth, copper, iron and zinc in proportions not greater than hereinafter specified may also be present:

Material	Maximum Allowable Per Cent
Bismuth	0.100
Copper	0.050
Iron	0.050
Zinc	0.005

The total per cents of antimony, bismuth, copper, iron and zinc shall not be greater than 5/10 (0.5) per cent.

The solder shall be uniform in composition. The results of an analysis of drilling or sections taken from any individual place in a lot, may be considered as representing the composition of the lot.

What is the proper construction of leather body belts and safety straps, and how are they tested?

Each belt and strap is made from first class, slow process, bark tanned harness leather, cut from the backs of steer hides. The leather is not split and should have smooth even grain and sufficient oil to make it pliable so that it will conform to tests that will hereafter be specified.

The sewing should consist of not less than five or more than six stitches per inch, lock stitched with five or six cord linen thread, hot waxed, and not stitched closer than 3/16 inch to any edge.

No. 8 solid copper rivets are used throughout.

Copper thimbles for the Dee rings and safety clips for the snap hook and buckle on the strap are made of No. 19 A. W. G. sheet copper, laid with ends toward each other and riveted in place.

The Dee rings, snap hooks and buckles are made of drop forgings from a good grade of steel, snap hooks and buckles being equipped with rollers. Before being attached to belts or straps, the fittings are given a load test as follows: The Dee rings, snap hooks and buckle frames all receive a minimum 1200 pull pounds tests without distortion.

In checking against defects of tex-

(*Continued on page* 34)

INSTALLS COMMON BATTERY EQUIPMENT

By
A. B. POGUE
District Manager
Kellogg Switchboard & Supply Co.

MARIANNA, Florida, is an old city whose corporate records date back nearly a hundred years. But its telephone service is as modern as any found in even the largest city, for just recently a new Kellogg 6-800 Masterbuilt switchboard was installed in the Marianna exchange of the West Florida Telephone and Telegraph company.

Located on the beautiful Chipola River in the approximate center of Jackson County, it is the seat of government for, and the center of, Florida's leading agricultural county. Here, on September 27th, 1864, was fought the Battle of Marianna, one of the few engagements on Florida soil during the Civil War. The Capital of the state, Tallahassee, which is 75 miles east, was the only southern capital that did not fall into the enemy's hands.

Marianna has several important manufacturing enterprises which include lumber mills, stave mills, cabinet works, cotton gins, canning plants, grain and peanut mills, and lime rock mines. Practically all of its many miles of streets are paved and the streets are flanked with an exceptionally large number of beautiful homes. It maintains a genuine southern hospitality and culture as of old which charms the visitor. With a population of only 3,373, Marianna boasts schools that are the equal of any in the south and its high school particularly is an exceptionally fine institution. The Federal building is a beautiful two-story structure of Spanish style that would even be a source of pride to a city of a far greater population. Marianna's modern hotel accommodations aid is attracting visitors the year round.

The telephone exchange at Marianna has proven profitable under its able management. The magneto switchboard that the company operated, had seen many years of service and was to be retired within the next two or three years according to the pre-arranged plans. However, when details of the Kellogg 6-800 Masterbuilt switchboard were called to the directors' attention, they quickly realized the value of better service, greater profit possibilities, flexibility in equipment, etc.

In the following excerpt, taken from a letter written just before the cut-over, F. A. Symonds, manager-secretary-treasurer of the West Florida Telephone company, gives the reasons for this preference and tells how his company protected its investment for all time and gave its subscribers the finest common battery service.

"As you know, we have recently placed an order for a 6-800 Masterbuilt switchboard and associated equipment. We felt we would retire our old equipment in another two or three years, but since we have heard and read of the development of the 6-800 Masterbuilt switchboard for smaller exchanges, we were prompted to investigate its advantages sooner.

"I might say we are mighty glad we did investigate the possibilities of installing a 6-800 Masterbuilt in our exchange, because we are now firmly convinced of its greater earning power, lower maintenance cost, speedier, yet cheaper operating methods, and finer service to our subscribers."

Mr. Symonds and his associates are highly pleased with the operation of the new switchboard. Previous to its installation the company's directors were certain that old subscribers could be more easily retained and new subscribers attracted by modern, common battery service. That they were correct in this reasoning, has been proven by the appreciation subscribers have already shown for the new service.

The new two-position 6-800 Masterbuilt switchboard in the Marianna exchange is equipped with 15 universal machine ringing, harmonic four-party cord circuits in each position. It has 300 universal line circuits—116 of which are already converted to common battery—and 20 magneto drop-and-jack toll and rural lines.

The local line equipment of a Masterbuilt board may be either full common battery, or it may be of the universal type as in the case of the Marianna board. The universal equipment permits one line at a time to be changed from magneto to common battery to suit conditions or convenience. The Universal cords permit any operator to handle local, rural, and toll calls without confusion or undue transmission loss. Common battery subscribers' bells are rung automatically, speeding up service and relieving the operator of the necessity of supervising and re-ringing on such calls. The full selective, harmonic party line ringing makes party lines more popular because of increased privacy.

Either drop or lamp signal may be used for magneto service with this modern equipment. Drops were preferred at Marianna for rural lines because the clattering of the drop is an audible indication of code rings originating on the line.

The telephone exchange at Marianna has been established for many years, but the present corporation was formed

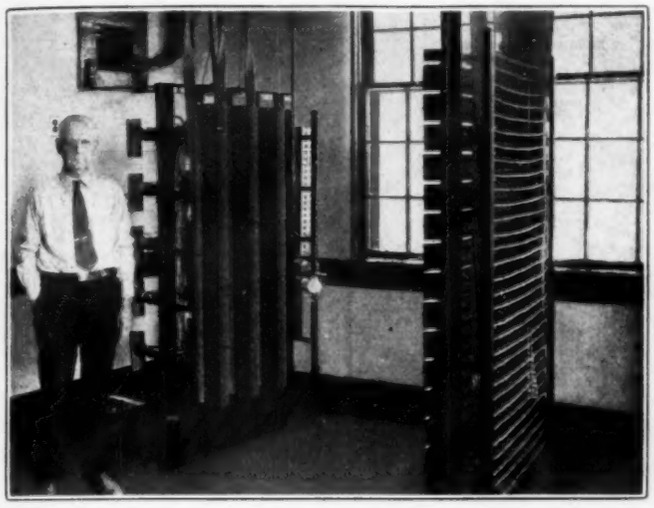
Modern Exchange Building of the West Florida Telephone and Telegraph Company at Marianna Which Houses the New Equipment.

in 1922 by C. E. Sudmall, president; J. C. Lumpkin, secretary-treasurer and general manager; and J. Bowers Campbell, vice-president.

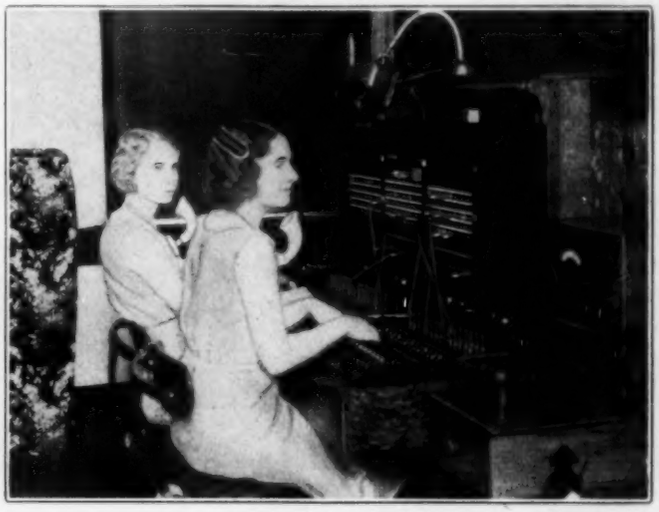
In September, 1931, Mr. Symonds purchased nearly all of the stock and became virtually sole owner of the company. There are only two shares of stock that he does not hold in his own name, and these two shares are held by the other directors of the company. The present directors of the company, F. A. Symonds, Mrs. Annie Rhea Symonds Daffin and C. E. Dorsey, Jr., are succeeding in doing an excellent job in promoting the business and building a sound foundation for future expansion.

Mr. Symonds is a telephone man of wide experience and of unusual capacity. He worked for railroads throughout the west and southwest as machinist, master mechanic and superintendent, until he selected the telephone field for his life's occupation. His first venture into this industry consisted of purchasing the telephone plant at Elba, Alabama, in 1910. He operated the property 15 years, selling it about six months before he and Mr. Dorsey purchased the Marianna property in 1925. Since then the Marianna exchange has progressed even more rapidly than before.

Common battery equipment opened a new opportunity and a wider field of service to the company with the result that its growth and the safety of its investment is assured.



Mr. F. A. Symonds, Manager, Secretary and Treasurer of the company, standing by the new relay rack and main frame.



Operators at the new 6-800 Masterbuilt switchboard recently installed at Marianna, Florida.

FAITH IN FUTURE SHOWN

(*Continued from page 24*)

Haute, Ind.; and J. G. Crane, Kansas City, to succeed R. B. Still of Portsmouth, Ohio.

Mr. Bryant moved that the secretary be instructed to cast a unanimous ballot for those named. The motion was carried.

Bank Deposits

Edward L. Scheck, National Depositors' Committee, Akron, Ohio, then spoke. This committee is working in the interest of depositors of closed banks. Mr. Scheck urged that the telephone convention adopt a resolution urging President Roosevelt to permit a portion of the federal government's relief fund to be used for releasing 60 per cent of the frozen deposits in banks that are still closed.

The feature address Thursday was given by Dr. David Friday, Washington, D. C., economist, on the subject, "The Future of Prices."

Dr. Friday discussed the gold situation and stated that President Roosevelt may reduce the gold in the dollar up to 50 per cent of its present value. He stated that the President is trying a big experiment and is making history in one way or another. In his opinion, England will co-operate with the United States and the program for raising prices will be successful. Business within the next 6 to 15 months will go forward at a tremendous rate.

When the prices reach the 1929 or 1926 levels, Dr. Friday thinks the dollar will be stabilized and the United States will go back on the gold standard. He expects the dollar will be stabilized too low and that the next five to ten years will witness a steadily-rising price level.

Rate Level Discussed

As to a price level for telephone rates, he stated that it would depend upon what the people will pay for telephone service. In Wisconsin, it was claimed that rates were too high and 72 companies lowered their rates. In the six months before the rates were lowered, the loss for these companies amounted to 243 stations per month. In the six months after the rates were lowered, the loss was 271 stations per month.

The results of this investigation did not bear out the theory that if rates were lowered subscribers would come back. The fact was that those discontinuing service could not pay any kind of a rate.

Friday was given over to the annual meeting of the Pioneers Association, details of which will be found on other pages.

Eight New Members

At the annual meeting of the Board of Directors held July 11, membership applications of eight companies were accepted. Resignations of five associate members and one operating company also were accepted.

At Thursday morning's session the board reelected officers for this year. They are:

President, F. B. MacKinnon, Chicago.

Vice-presidents: Houck McHenry, Jefferson City, Mo.; Henry A. Barnhart, Rochester, Ind., and W. G. Brorein, Tampa, Fla.

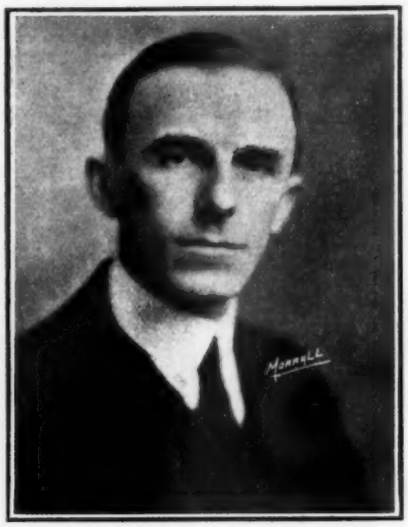
Secretary-treasurer, Chas. C. Deering, Des Moines, Iowa.

On motion of W. H. Bryant, the foregoing slate was chosen. President MacKinnon announced the executive committee to be:

J. H. Agee, Lincoln, Neb.; E. C. Blomeyer, Chicago; Geo. X. Cannon, Freeport, Ill.; Frank A. Knapp, Bellevue, Ohio; W. Roy McCanne, Rochester, N. Y., and Geo. A. Yanchowski, Chicago, with President MacKinnon as an ex-officio member.

MANUFACTURING TELEPHONE CAPACITORS

By
RAY H. MANSON
Chief Engineer
Stromberg-Carlson Telephone Mfg. Co.



Ray H. Manson

TWENTY years ago, the fact that telephone equipment functioned at all, was sufficient to satisfy an operating company. Today, however, the telephone has become an accepted part of business and social life and mere operation is no longer sufficient. Quality of transmission, freedom from trouble and long service are now primary interests of operating companies.

The attainment of these three goals requires up-to-date equipment made with scrupulous care, attention to detail and adherence to specifications. In no other division of telephone equipment manufacturers are these factors more important than in the making of capacitors. Painstaking care is required to build capacitors that will not break down under telephone voltages, that will have but infinitesimally small deviations from their rated capacities and will not change their rated values throughout the life of the shipment in which they are used. Capacitors which have these characteristics insure high quality of transmission and long and trouble-free service indefinitely.

The kind of quality of foil and paper used, the constant and uniform tension of every turn of winding, the elimination of every measurable trace of that enemy of capacitance — moisture, the impregnation of capacitors so that they will remain moisture-free throughout their life and the development of suitable tests to insure uniformity of product—these are vital problems in the manufacture of reliable capacitors, the successful solution of which means dollars and cents to an operating company.

Perhaps the most revolutionary change that has taken place in the construction of capacitors during recent years has been the gradual increase in the use of aluminum foil over that of tin. One reason for this change is that tin foil being softer and having less tensile strength is more subject to pin holes and is less able to stand the strain of winding. Aluminum is far more ductile and having greater strength, may be rolled into foil with less danger of irregularities occurring throughout its length. In addition are the dual advantages of lightness of weight and conductivity with that of copper.

Three types of paper are generally used in good capacitors—linen, woodpulp and craft, each representing the highest development in the paper-making industry. All have the common property of possessing great dielectric strength. Their extreme tensile strength is realized when it is understood that each sheet is so thin that more than 2000 of them are required to equal an inch of thickness. These papers must be free from pin holes and from metallic particles which would weaken or disrupt its insulating properties.

Capacitors were originally wound in the same shape in which they are assembled in their cases. It was found, however, that this method was not wholly satisfactory because of the tendency to break papers and foils in the winding operation and because of the rapid variations in tension incurred. Engineers have developed a method of winding which allowed the capacitors to be would with constant tension at all times. Uniform tension makes possible the production of units of uniform capacitance and without the wrinkling of paper or foil which are sources of insulation breakdown.

During the winding process, terminals generally are inserted between the center and the end of the winding. These are inserted here rather than at ends of foils in order to speed up capacitor action. Terminals are made of tinned brass strip to facilitate permanent electrical and mechanical soldered connections.

After winding, capacitors are placed in special steam heated vacuum ovens. Here a highly specialized and complicated process lasting 24 hours, is carried on to insure the removal of every possible trace of moisture. The capacitors are then immersed in a special molten wax under both heat and vacuum until each is impregnated from end to end with insulating and moisture-proofing material. The units in process are then chilled, removed from the ovens and dipped in a special sealing wax to safeguard further, the exteriors against moisture absorption.

Wax used in vacuum ovens to impregnate capacitors also undergoes processing for the removal of moisture absorbed in shipment and storage. Besides being headed under vacuum, it is mechanically strained to remove all foreign matter before entering the impregnating ovens. Periodic tests of wax are made to assure maintenance of uniform quality.

Usually capacitors are packed carefully in trays and transported to a preliminary inspection department where each unit receives suitable tests for their electrical and physical properties. They are then transported to an assembly department where the units are assembled in proper combinations of capacitance and terminal blocks wired. Next they are wrapped with insulating paper to prevent electrical contact with their metal containers into which they are finally placed. All void spaces between the case and the capacitors is then filled with a compound which resists moisture and heat to a temperature of 150 degrees F. without physical change. Mounting brackets or covers are then attached, and the exterior of the case coated with finishing compound. As a final operation, each assembly usually is given through mechanical inspection and electrical tests prior to placing in stock for shipment.

This is the story of the telephone capacitor. By the above description, it readily can be seen that this unit is designed and built to render an efficient long life and it clearly shows the attention that is given to the manufacture of each little part of the telephone system in order that the system as a whole will give satisfactory service to operating companies.

L. D. KELLOGG, TELEPHONE PIONEER, DIES

THE HOST of friends of Leroy D. Kellogg were shocked at the unexpected news of his death which occurred on August 1 at his home in Pasadena. He had been in Chicago for about two months prior to the time of his death in connection with the affairs of the Kellogg Switchboard and Supply company, of which he was a vice-president, and to look after personal business matters, and had just returned to Pasadena when his death was announced.

Mr. Kellogg was a man of unusual business activity and had many important interests outside of his active connection with the telephone industry, but he continued to devote a large part of his time to the cause of Independent telephony because of his belief, which dated from his earliest business recollection, in the inherent importance of the Independent development of telephone apparatus.

He was exceptionally energetic in any matter that gained his interest and this trait in his character was probably responsible for a semi-nervous breakdown that he suffered sometime prior to his death, and which was augmented by the record breaking hot spell in Chicago at that time. He went to the Michael Reese Hospital for observation due to this indisposition, but nothing serious was discovered in his condition at that time, and the news of his death a little later came as a distinct shock to all of his friends, and to the telephone industry in which he had been an important factor during the whole of his business life.

The Kellogg Switchboard and Supply company was founded by Mr. Kellogg's father, Milo G. Kellogg, in 1897. It was one of the first Independent telephone manufacturing companies to be organized after the original Bell patent expired, and the first large Independent switchboards were built by the Kellogg company, then located at Highland Park, Ill.

As soon as Mr. Kellogg was out of college he joined his father in the active conduct of the Kellogg company, and was secretary of the company for a number of years and later on was its president. At the time of his death he was a director and first vice-president of the company and was active in directing its policies. He was one of the outstanding constructive thinkers of Independent telephony and responsible for many constructive policies in the Independent field. He was for many years an active member of the board of directors of the United States Independent Telephone Association.

Mr. Kellogg was a lawyer and used his legal knowledge in the field of patent law relating to telephony. It is a significant compliment to him that but a few of his friends outside of his in-

Leroy D. Kellog

timate business associates, knew of his accomplishments along this line, or even that he had been admitted to the bar.

Mr. Kellogg is survived by his widow, Mrs. Ellen Neel Kellogg, and three daughters, Misses Venie Louise and Elsie Neel and Mrs. Sven Gantzel, all of Pasadena, and by a brother, James G. Kellogg of Winnetka, Ill.

The beautiful side of Mr. Kellogg's character was reflected in his home life, in which no man ever took a more genuine pleasure. The home was the center of his existence and his family life was a poem of exquisite beauty. One great sorrow entered into this picture in the death of his own son, Leroy Junior, which occurred in June, 1923, while the boy was a student at Princeton University. Leroy Junior suffered a slight abrasion of his knee while playing football at the university and infection set in which could not be stayed.

While Mr. Kellogg lived in California for several years he never gave up his home at Deerfield, Ill., which was his legal residence at the time of his death. He was 56 years old and was buried at Oakwoods Cemetery, Chicago, on August 5.

HELPS CITY WITH FIRE ALARMS

Cooperating with the Peshtigo, Wis., telephone exchange the mayor and fire chief have worked out a simple plan of giving fire alarms.

Following is the plan submitted by the mayor.

"In case of fire the report is given to the central telephone operator at once, giving as near as possible the exact location. The operator will immediately relay the call to the station from where the fire siren can be sounded.

"If the fire occurs between the hours of 9 p. m. and 7 a. m. the alarm will be sounded from a pulp mill. The whistle will sound several short blasts, followed by one, two or three long blasts to indicate the ward. If the fire occurs between the hours of 7 a. m. and 9 p. m. the alarm will be given on the fire siren."

STROMBERG GETS THREE CONTRACTS

Stromberg-Carlson Telephone Manufacturing company has been awarded three contracts for switchboards, it is announced.

The Delhi Telephone company of Delhi, N. Y., ordered a two-position Super-Service switchboard to be equipped with 320 central energy, 40 rural and 15 toll lines Mrs. Mary B. Adee is president of the Delhi company.

An order for a three-position Super-Service switchboard has been received from the Columbia Telephone company for installation in its exchange at Elizabethtown, Pa. It is to be equipped with 300 central energy, 30 rural and 20 toll lines. H. A. Oberdorf is general manager of this company.

The Cayuga Southern Telephone company of Moravia, N. Y., has contracted for a P. B. X. switchboard for installation in Wells College, Aurora, N. Y.

RAGEN STILL DIES

Ragen Still, son of R. B. Still of Telephone Bond and Share company, with headquarters in Potsmouth, O., and formerly manager of Gulf States Telephone company, Tyler, Texas, died July 1. His death resulted from sinus infection. Interment was made in Rusk, Texas.

At the beginning of 1933 there were more than 4,350,000 miles of telephone wire in service in the state of New Jersey.

PIONEERS HOLD ONE-DAY MEETING

THE concluding day of the annual convention of the United States Telephone Association was given over to the Independent Pioneer Telephone Association of the United States for its annual meeting. It was held July 14 at the Stevens Hotel, Chicago.

President Louis Pitcher, Dixon, Ill., called the meeting to order at 10:30 a. m. After welcoming the Pioneers, Mr. Pitcher called upon J. K. Johnston of Indianapolis, secretary and treasurer for his report.

H. B. MacMeal, Chicago, then was asked to explain his plans for writing the history of Independent telephony. (Mr. MacMeal's history will be discussed in the September issue of TELEPHONE ENGINEER.)

K. B. Schotte, Kittanning, Pa., expressed approval of the plan for publishing the history and moved that a committee be appointed to co-operate with Mr. MacMeal. The motion was carried when put to vote and President Pitcher announced a committee consisting of John H. Wright, Jamestown, N. Y., chairman; Mr. Johnston; E. D. Glandon, Pittsfield, Ill.; Mr. Schotte, and Stanley R. Edwards, Chicago.

Mr. Glandon then reported progress made in the collection of pioneer Independent equipment.

Mr. Glandon stated that in 1927 a movement was started to collect and find a proper housing place for relics of the industry. The movement has gone forward, relics have been supplied by various Independents and a place has been found for the collection in the Museum of Science and Industry in Jackson Park, Chicago.

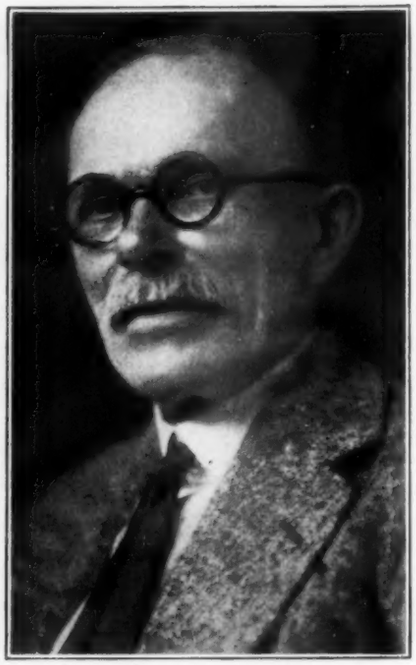
It was announced that the executive committee had appointed a nominating committee consisting of Frank E. Bohn, Fort Wayne, Ind.; Herman E. Hageman, Lorain, Ohio; and George W. Rodormer, Chicago. The executive committee decided to elect the officers for the ensuing year at this meeting and to take office this fall at the close of the association's year.

Mr. Bohn read the report for officers as follows:

President, John H. Wright, Jamestown, N. Y.

All of the vice-presidents were renamed and also the following additional ones: F. B. Kingsbury, Hamden, Conn.; J. L. Mathews, Statesboro, Ga.; W. O. Randall, Sumter, N. C.; and H. C. Marsh, St. Marys, W. Va.

Secretary-Treasurer, J. K. Johnston, Indianapolis, Ind.



John H. Wright

Executive committee; Geo. W. Rodormer, Chicago, Ill.; Walter J. Uhl, Logansport, Ind.; K. B. Schotte, Kittanning, Pa.; Houck McHenry, Jefferson City, Mo.; and Stanley R. Edwards, Chicago, Ill.

Mr. Bohn moved the acceptance of the report and the election of the officers as nominated, which was unanimously carried.

The vice-presidents reelected were: W. H. Bryant, Mobile, Ala.; C. A. Rolfe, Beverly Hills, Calif.; Ernest Irwin, Long Beach, Calif.; W. G. Brorein, Tampa, Fla.; Otto Wettstein, Jr., Orlando, Fla.; Jacob W. Baker, Coeur D'Alene, Idaho; F. B. MacKinnon, Chicago, Ill.; Frank L. Eldridge, Chicago, Ill.; Henry A. Barnhart, Rochester, Ind.; John W. Coffey, Indianapolis, Ind.

Charles C. Deering, Des Moines, Iowa; P. C. Holdoegel, Rockwell City, Iowa; John A. Gustafson, Abilene, Kans.; C. H. Moore, Glasgow, Ky.; Peter Kerr Higgins, St. Louis, Mo.; W. J. Melchers, Owosso, Mich.; J. C. Crowley, Jr., St. Paul, Minn.; George M. Kloidy, Lincoln, Neb.; Walter I. Sweet, River Edge, N. J.; W. Roy McCanne, Rochester, N. Y.

C. P. McCluer, Tarboro, N. C.; A. T. Nicklawsky, Hillsboro, N. D.; Frank L. Beam, Mt. Vernon, Ohio; C. L. Jones, Athens, Ohio; E. J. Boase, Frederick, Okla.; H. W. Hubenthal, Oklahoma City, Okla.; Minor Corman, Hood River, Ore.; Frank H. Russell, Portland, Ore.; G. S. Herbert, Harrisburg, Pa.; W. S. Paca, Oil City, Pa.; James N. Cox, Cookeville, Tenn.; W. N. McAnge, Jr., Bristol, Tenn.

C. A. Shock, Sherman, Texas; C. L. Ovitt, Enosburg Falls, Vt.; Rodney M. Coggin, Warsaw, Va.; William F. Goodrich, LaCrosse, Wis.; Nellie L. Edwards, LaCrosse, Wis.; William L. Smith, Neillsville, Wis.; Carrie C. Lester, Spokane, Wash.; Francis Dagger, Toronto, Ontario, Canada; and James R. Forbes, Waterford, Ontario, Canada.

The report of the resolutions committee was given by Ed. D. Glandon, Pittsfield, Ill. A resolution on the deaths of Frank J. Brookman, Rochester, N. Y.; George W. Calkins, Malone, N. Y.; Frank J. Foster, Evanston, Ill.; Harvey B. Gash, Avon, Ill.; Forest Ray Irons, Woonsocket, S. D.; Fred R. Parrett, Princeton, Ind.; Herbert A. Rowe, Elkhart, Ind.; Lorin H. Roberts, Stewartsville, Mo.; Henry F. Skidmore, Chicago, Ill.; A. R. Stief, New Holland, Pa.; C. M. Thompson, Harrisburg, Pa.; and Shirley T. Van Cleave, Terre Haute, Ind., was read and adopted.

A resolution was on the deaths of two past presidents: Hart F. Farwell, of Terre Haute, Ind., and Harold E. Beyer, of Chicago, Ill.—the first and second presidents of the Independent Pioneer association, also was read and adopted.

William Rainey Bennett, Elgin, Ill., the main speaker of the meeting, was introduced by President Pitcher. Mr. Bennett spoke on "The Man of Today." Although his address was in a humorous vein, Mr. Bennett struck a responsive chord with the Pioneers by his many concrete facts and ideas relative to success in business and life.

BLAIN TRANSFERRED

Ray Blain, editor of TELEPHONE ENGINEER's "Line and Desk" and member of the U. S. Signal Corps Staff, Washington, D. C., has been transferred to Omaha, Neb., and will be Corps Area Telephone Engineer for the states of North and South Dakota, Minnesota, Iowa, Nebraska, Missouri, Kansas and Arkansas.

ACCIDENT FATAL

Harry Schnittker, sales manager, Everstick Anchor company of St. Louis, died July 14 of injuries received in an automobile accident.

2 Leaders Combine Experience

● When the 85 year old Hemingray Glass Company recently became a division of the Owens-Illinois Glass Company, the experience of two leaders in glass manufacture was consolidated in the production of Hemingray Glass Insulators.

Owens-Illinois is celebrating its 60th Anniversary. Its long years of development of technical processes, together with its expanding activities in the industrial field bring to Hemingray Insulators increased research and engineering facilities of great value.

Operations will continue as heretofore in the highly efficient plant at Muncie, Indiana, the operating and executive staff remaining unchanged. Owens-Illinois Glass Company, Hemingray Division, Muncie, Indiana.

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The following books have proven popular helps for those who want to keep up with the latest problems:

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Audels Handy Book of Practical Electricity	4.00
Electricity for Beginners, by E. H. Thomas	1.50
Artificial Resins, by Scheiber and Sandig	9.00
Acoustics, by George Walter Stewart	5.00
Principles of Electricity, by Page & Adams	4.25
Transmission Networks & Wave Filters. By T. E. Shea	6.50

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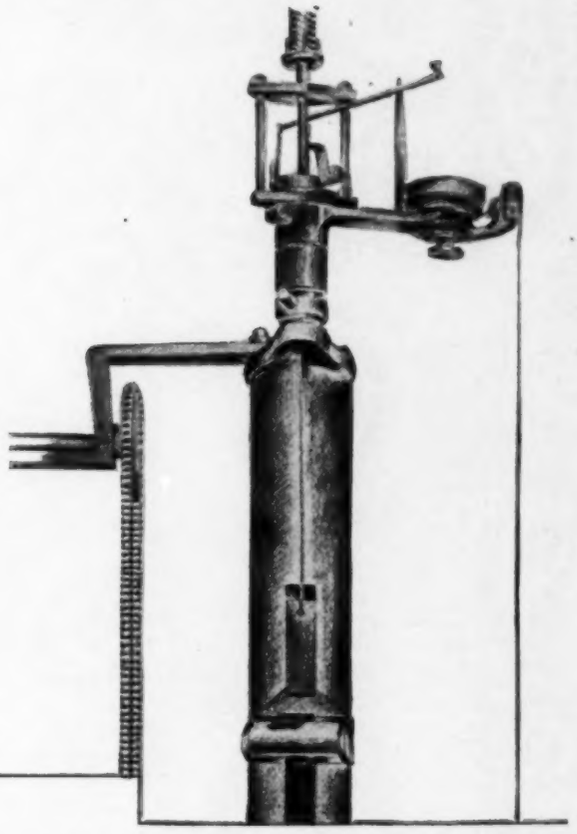

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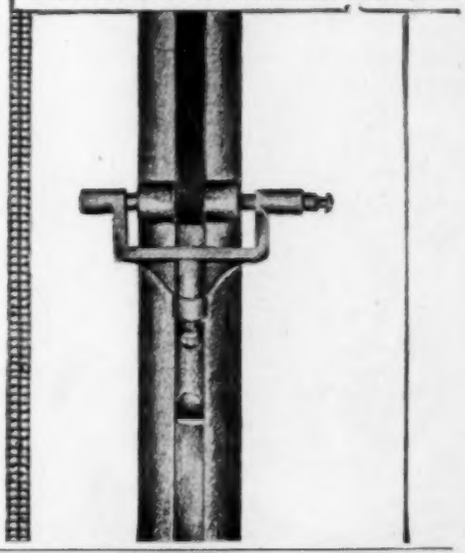

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THIS NEW PRODUCT MAY BOOST YOUR REVENUE

EDITOR'S NOTE: *Telephone managers are urged to investigate products such as is described below so as not to overlook any possibilities of increasing their revenues. There are prospects in every community for products of this type.*

THE Signal Code Call System manufactured by the Signal Engineering and Manufacturing company, 148 West 14 Street, New York, N. Y., continues to grow in popularity with both the Bell and Independent telephone companies and the public.

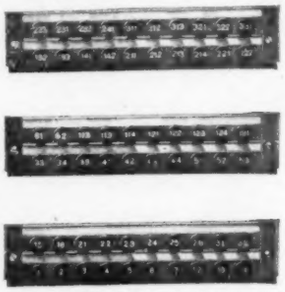
The system is primarily a means for promptly completing telephone calls by automatically reaching members of an organization and calling them to nearest branch telephone; and for broadcasting special messages or emergency signals. Signal call service is in general use in factories, hospitals, large offices, banks, schools, garages, department stores, etc.

Code numbers are assigned to members of an organization. When one fails to answer his desk telephone, the operator presses code button, which broadcasts his number three times on signal devices so distributed to be heard throughout the premises. The person called steps to the nearest telephone and the call is promptly completed.

Signal call has proved to have many virtues. It speeds up telephone calls, both local and long distance by insuring prompt connections with persons called, conserves the time of high salaried men by insuring prompt inter-communication, eliminates time interruption loss at each branch telephone in answering inquiries for parties called; makes it possible for better service by the telephone operator because the signal call is manfinding she can serve calling parties; delivers instantly by broadcasting in code special messages to any one or number of persons; is of much importance in case of breakdown, fire, holdup, or a hurry conference call; gives full efficiency to that most important artery of any business—communication—by locating persons in a few seconds without disturbance.

Every member of the organization, regardless of his whereabouts, is at the fingertips of the telephone operator.

The installation of a call system does increase the efficiency of telephone service regardless of the speed with which



Sectional Knife Code Key Units in Signal Code Call System.

the operating company completes a call to the subscriber, even though measured in seconds, it is often a few minutes before the call is completed to the party called, usually because his whereabouts are unknown. Telephone communication to be efficient and economical requires prompt completion of calls.

Signal Call Sending Station

The signal call sending station is usually placed on the P. B. X. switchboard. The sending station may be furnished with sectional knife key units giving either 10, 20, 40 or 60 code numbers. The unit system of design makes possible the changing from 10 to 20 code numbers and additional of units of 20 numbers with the same ease as in adding units to a sectional bookcase. All connections are made automatically.

A simple system for small organizations where only one signal is required is also furnished.

The signal equipment is designed to meet varying needs, and includes many different types including:

Soft Tone Bell, equipped with a padded plunger giving a pleasing yet penetrating tone.

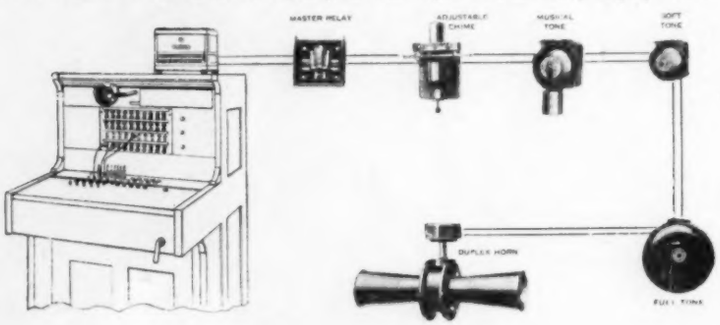
Musical Tone Bell, same as soft tone bell with resonator added, mellowing the tone.

Chime signal, Xylophonic principle, giving a distinctive musical tone with remarkable penetration. There are also different sizes of weatherproof bells, and Duplex horns.

There is also several types of auxiliary service with full equipment which may be connected to the Signal Code Call System.

Installations have been made of the Signal Call by the telephone and telegraph companies, railroads, municipalities and by the largest and smallest factories in America and foreign countries. Telephone operating companies desiring to increase their revenues are urged to write direct to the Signal Engineering & Mfg. company for complete information covering its Signal Code Call System.

P. B. X. Switchboard Showing Signal Call System Auxiliary Equipment.



ELECTED DIRECTOR

Winthrop W. Aldrich, president of Chase National Bank, was elected a director of the Westinghouse Electric and Manufacturing company at a recent meeting of the board.

In addition to the directorship to which he was elected, Mr. Aldrich is a director of the Chase National Bank, The American Telephone and Telegraph company, American Express company, Discount corporation, Rockefeller Center, Inc., and other companies.

BUY EQUIPMENT

The Telephone Repair Shop, Chicago, and the Rebuilt Electric Equipment company, Chicago, have purchased the telephone equipment of the Premier Electric company. It is reported that the Premier company is entering the radio business.

GIVES PAY INCREASE

Westinghouse Electric & Manufacturing company put into affect July 1 a five per cent raise in salaries and wages. This applies to both salary roll and hourly roll rates and includes employes of all subsidiary companies.

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30 years of experience in designing and building equipment for terminating, distributing and protecting lead covered telephone cable is at your disposal.

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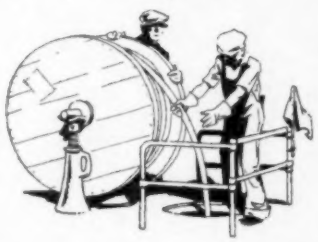

YOU might as well...

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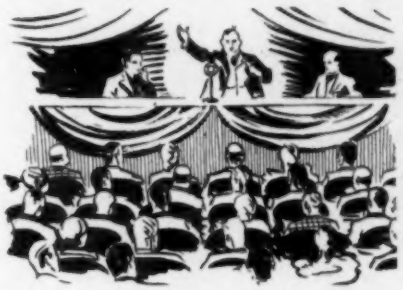


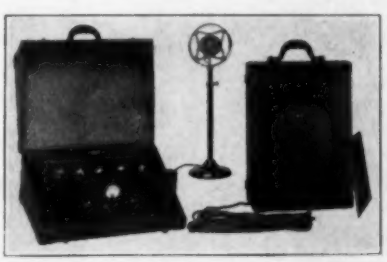
There's a steady demand for this sort of thing in every section of the country—large towns, small towns, even rural districts.

Wherever there's an outdoor gathering, picnic, sporting event, fair, or the like, they want some means for making announcements or speeches heard even by those on the outskirts of the crowd; also in auditoriums; conventions, banquets, retail store sales events—every one a live prospect for Public Address equipment—amplifiers. And they'd rather buy or rent from *you*. They know the phone company is dependable.

Let it be known that you do such work and the business will gravitate to you.

Of course you want first class equipment. Designed and manufactured by one of the leading companies.

This Webster Portable Amplifier is just the thing. (Other equipment available too for permanent installations). Sturdily made, light in weight. Unusual volume. **True tone**, no distortion. Used on many famous public occasions. Easy to install. Low priced. May we tell you something about the earning possibilities in Public Address work and quote price of this outfit? Write



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EXTEND the time of replacement...reduce maintenance costs ...by specifying *Crapo* Galvanized Products on all new and repair work! They combine every factor essential to long life and reduced expense: *pure* zinc coatings that neither crack nor peel, correct tensile values, proper ductility.

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CONVENTION RAMBLINGS

By J. A. S.

Yes suh, Kunnel W. H. Bryant, that sturdy pioneer of the Old South, located down on the Mobile Bay, who never misses a National Convention, was on the job from start to finish. While not as deeply interested in the telephone business as formerly, he is just as interested in the telephone industry.

Dr. C. L. Jones of Athens, Ohio, was showing a folder proclaiming the fact that his company, the Athens Home Telephone company, was paying its 104th quarterly dividend. All companies claiming a better record please stand upon their heads and be counted.

C. D. Kinne, general sales engineer for Stromberg-Carlson, spent only one day at the convention, when he was called back to Kansas City on account of the death of his wife's mother. Cy has countless friends throughout the country who extend sympathy.

Jay G. Mitchell, former secretary of the Illinois Telephone Association, and for the past few years with the Pennsylvania Telephone corporation, was seen on the floor of the convention for a short time during the sessions.

John H. Wright of Jamestown, New York, made desperate efforts to reach the convention before its expiration, but only succeeded in reaching Chicago after adjournment. Mr. Wright was elected president of the Independent Pioneer Telephone Association at its closing session. He has been interesting himself in reopening one of the Jamestown banks, closed since the moratorium early in March, and stated that all preparations are completed for the resumption of business by the bank at an early date.

A checkup of the attendance showed that the state of Texas was not represented this year except by proxy; R. B. Still and J. A. Smith, former Texans, composed this here proxy business.

John Ballentine, formerly interested in the Sands Electric company, North Chicago, attended the convention at the Stevens this year. He is now selling life insurance and claims business has been real good with him. Congratulations, big boy.

It was suggested that a convention of "former salesmen" of manufacturers might attract a fair attendance, but the idea was abandoned when some of the "big shots" failed to put in appearances.

John R. Hastie, was another of these "exes" who is well remembered by the old timers. He left telephone publication work a few years ago and has been making and breaking records so fast in the insurance business that he has all the others in that line dizzy. John made an excellent talk at the convention upon the subject of annuities for telephone employees.

Announcement of the sudden death of Harold L. Beyer, vice-president of Telephone Engineer Publishing Company, during the second day of the convention, brought many expressions of regret from telephone men prominent in the industry throughout the country. Mr. Beyer was very popular wherever he was known.

Dr. A. F. Holmes, president of the Athens Home Telephone company, located in that beautiful college town of Athens, down in Ohio, is fast recovering from an operation performed several months ago; he is reported as again active and full of ambition.

Ben Woodbury, telephone sales manager of the Stromberg-Carlson company brought his family to the convention and spent a week in Chicago; Ben never has time to see much of the beauty of things—he works so darned hard and persistently, but he believes in letting the family have all the advantages possible. He called the writer a day before leaving for home and stated that he had not had time to visit the Fair. But he looks to be in fine health.

P. Kerr Higgins of St. Louis was another who took time to bring the family and relatives for a week in Chicago. They left early in August for a few weeks in California, P. Kerr going on to Honolulu for a business and social visit where hula hula is popular.

And speaking of families, H. W. Hubenthal and wife moved up to Chicago for some three weeks, leaving the heat of Oklahoma behind them. And could you blame them?—Well, hardly. The weather was fine during their stay in the windy city and the sights kept them interested every day.

W. C. Dillon, who talks, thinks, dreams and breathes "Temperometer" writes from New York that he regrets being unable to demonstrate his apparatus to the "world" at the convention. But he is bringing his solder temperature testing equipment to the "big fish" of the East and hopes to come back with good news in the near future.

H. O. Leinard attended as usual, bringing his wife and son along to enjoy the Fair while he attended to business.

LINE & DESK: QUESTIONS AND ANSWERS

(Continued from page 25)

ture and stiffness, the safety strap is bent with the hair side out in at least three places; namely each end and the center, over a mandrel 0.675 inches in diameter. The body belts are subjected to the same test at points where it is possible to bend it as under the tool loops and at the buckle straps. Under the tests the leather shall show no cracks or elongate excessively.

The final test is in subjecting the body belt and the safety strap to withstand a pull of 400 pounds. This test is made with the snap hooks of the safety strap hooked in Dee rings and both subjected to the pull.

TELEPHONE PIONEER DIES

William A. Childs, of Englewood, N. J., died on July 16 at his home in Los Angeles at the age of 87.

From 1868 until he moved to California in 1909 Mr. Childs lived in Englewood. He helped establish the first telephones there, calling on the residents and business houses with the first subscription list.

Mr. Childs was a superintendent of life insurance agencies when, in 1874, he formed the Law Telegraph company, which provided rapid communication between lawyers' offices and the courts through the use of dial printing instruments. Later he and his associates devised an early switchboard or "central office," which was retained when telephones replaced the dial instruments. When the Bell Telephone company of New York took over the telephone business, about 1878, the Law Telegraph company continued to manufacture and install its switchboards for the telephone companies in Philadelphia, St. Louis and other cities. The business was ultimately sold to the Western Electric company.

FALL FATAL

Roy Spalding Dunkin, district superintendent of the Bell Telephone plant at Upper Darby, Pa., died recently, following a fall from a porch.

NEW DEAL'S EFFECT ON THE INDUSTRY

(*Continued from page 23*)

is speculation. It is devoured and there is panic."

Another wise man said "A fool and his money are soon parted."

During and since the World War, much stupid money of our stupid people has gone to European and South American countries, and seems to have little inclination of returning.

Let us hope that the New Deal includes a national collection program to the extent of the debtor's ability to pay, and that at such point of collection, accounts shall be squared; for short settlements make long friendships.

Uncle Sam has padlocked his money chest, and I hope he may substitute for the stay-away eagle on any future dollars which may go abroad a cut of the homing pigeon.

Price Equilibrium

If we are wise, much of these loans to nations and to the citizens and institutions of nations beyond the seas will in time return. Debtors will desire to again trade in this, the greatest market in the world. They will also fear that they may again need our credit aid, therefore, self interest in the end will turn their thoughts to squaring accounts with our nation and with our people.

If business and industry now reviving are to continue, prices must be kept in equilibrium. Though at this time, goods from products of the farm reach the consumer at only one per cent below the prices of 1910-14 while prices paid to the farmer are 47 per cent lower, recent rises in farm products are bringing about the necessary equilibrium.

By the Industry Recovery Act and Farm Relief Measures, it is expected that prices generally can be brought and kept in equilibrium and maintained at such level as will enable labor, producers and traders to realize a fair return and no more. No better aid to recovery can be performed by the Industry Recovery measure.

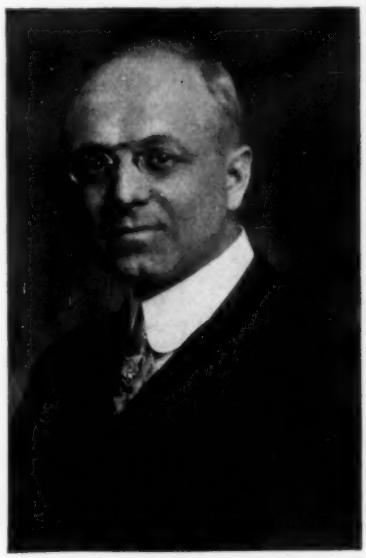
New Deal and Telephony

The New Deal will affect telephone companies in the same manner and degree as it will affect all other industry and business. When agriculture, labor and business have a fair return, the people will buy and pay for the things they need to the extent of comfort and convenience. Telephone service is a necessity, a comfort and a convenience. Its use should and will be more widely employed. Let us hope that manufacturers and inventors may find means by which we can extend telephone service as it increases in volume at less charges and yet receive a fair compensation for both labor and capital. What I have said here as to our problem is also the problem of every other business and industry. In no other way can industry and trade continue to grow and develop except by reducing the costs of goods and other services wherever possible. However, I do not suggest that either labor or capital should not be reasonably compensated, for both are entitled to and must have a living wage.

Of course our group will cooperate. We shall in good faith and zeal do our full part of the program required of us by the New Deal, with the aid of which I feel that we can all face the future with courage and assurance that we are entering into a period of prosperity of duration concurrent with maintenance of equilibrium of effective prices of commodities, goods and service.

HAROLD L. BEYER DIES

The telephone industry lost a great friend when Harold L. Beyer, of Chicago, Ill., vice-president and director of Telephone Engineer Publishing company, former president of the Independent Pioneer Telephone Association of the United States, former director of the United States Independent Telephone Association and former president of the Interior Telephone company, Grinnell, Iowa, died of high blood pressure, July 11.



Harold L. Beyer

Born in Chicago in 1875, Mr. Beyer attended Grinnell College, Grinnell, Iowa, graduating in 1898. He went to Harvard Law School to study law and graduated in 1902. After practicing law in Chicago for several years, he moved to Grinnell in September, 1905, where he continued his legal practice.

In January, 1906, Mr. Beyer became director and president of the Interior Telephone company. About the same time he became a member of the banking firm of C. W. H. Beyer & company of Grinnell. From 1907 to 1912, he was director and treasurer of the Long Distance Copper Telephone company.

From 1913 to 1915 Mr. Beyer served as president of the Iowa Independent Telephone Association. He was a director of the old Independent Telephone Association of America, later the United States Independent Telephone Association, of which he continued to be a director for several years. He was elected a vice-president of the United States association in 1918 and in 1919 was appointed chairman of the Iowa district of the association.

In November, 1921, Mr. Beyer was elected as the second president of the Independent Pioneer Telephone Association of the United States. He was a member of the executive committee of the national association.

Mr. Beyer came to Chicago from Grinnell, Iowa, about 1924 but continued as president of the Interior Telephone company for some time. In Chicago he was a partner in the law firm of Cassels, Potter & Bentley.

INJUNCTION GRANTED AT WACO, TEX.

Federal Judge Charles A. Boynton recently granted a permanent injunction restraining the City Commission of Waco from enforcing a rate reduction ordinance passed by them on April 18. Judge Boynton's action followed the city's decision not to further defend the case.

Earnings of the Waco exchange last year were less than three per cent and the effect of the city's ordinance reducing the rates would have been to virtually wipe out all earnings. The company was therefore compelled to take the case into the courts in order to prevent confiscation of its property.

The Waco property was formerly owned by the Texas Telephone company and was promoted by the late J. B. Earle, nationally known telephone man.

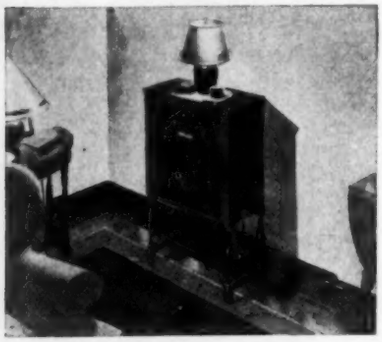
Gordon Brown, Cooperstown, N. D., has been appointed general manager of the Moore and Liberty Telephone company of Enderlein, N. D. Mr. Brown fills the vacancy incurred by the death of the late H. D. Lints.

NEWS OF MANUFACTURERS

ANNOUNCES NEW METAL DUCT

Xtensionduct is the new name of material for an electrical wiring method announced by National Electric Products corporation of Pittsburgh, Pa.

Xtensionduct is a metal duct for extending existing outlets neatly, reasonably, simply, in almost an invisible



Metal Xtensionduct for carrying wires neatly and unnoticeably to neat receptacles.

manner and at very low cost of material and labor. Telephone circuits are laid in the duct and the cover snapped on. The duct is finished in a neutral brown or mahogany and can

Metal Xtensionduct

be changed easily to any color by one coat of quick drying enamel.

Xtensionduct has been put on the market under the theory that the public is pretty well fed-up with amateur extensions of electrical circuits from where it is to some place else in a way that is unsightly and hazardous from a personal injury point of view, it is said.

Telephone companies now have a low cost extension which competes with non-metallic methods that quickly became unsightly, bothersome and of a more or less frail nature.

NEW CATALOG

A complete story of Westinghouse Instrument transformers has recently been published by the Westinghouse Electric and Manufacturing company in a 64-page catalog entitled Westinghouse Instrument Transformers. Technical information, ration and phase angle curves, descriptive information and prices are included in this publication. Copies may be obtained from the company's nearest district office or direct from the advertising department, East Pittsburgh, Penna.

ATTRACTIVE BOOKLET

One of the most interesting pieces of advertising literature ever distributed among telephone companies was the newspaper style booklet issued by the Cook Electric company, inviting telephone men to the World's Fair and to the Cook headquarters at the recent National Telephone Convention, the Stevens Hotel.

The booklet included pictures of the outstanding buildings at A Century of Progress and really convinced one that he should attend the Fair during the afternoons of the convention days.

On the back page Cook Terminal and Protection Equipment was attractively displayed in color. The Cook company is to be congratulated for getting out such an attractive and interesting booklet.

AUTOMATIC OILERS

Speedway Manufacturing company, Cicero, Ill., announces a line of automatic oilers. These new Oilers are of twe types: "constant level" and "thermal." Constant level oilers are designed especially for use on electric motor bearings and other reservoir bearings with oil-ring, packing, or ball or roller bearings where oil in the reservoir should be maintained at a determined level. Thermal oilers, designed for use on sleeve bearings of the open type, are operated wholly by change in the bearing temperature.

ISSUES FOLDERS

The Copperweld Steel Company, Glassport, Pa., has issued two publications, one describing non-rusting "Copperweld" overhead line construction and the other, which is entitled "Grounding Notes," gives interesting and valuable information on grounding work.

PURCHASES CENTRAL OFFICE EQUIPMENT

Officials of the Tomball Telephone company of Tomball, Texas, have contracted with the Stromberg-Carlson Telephone Manufacturing company for complete new central office equipment to be installed in the village of Tomball, which is located in the center of a new oil field recently developed in Southeastern Texas.

The contract calls for a new No. 105-A Stromberg-Carlson standardized Magneto Switchboard wired for 150 lines and 15 cord circuits and equipped with 100 lines and 10 cord circuits complete with 150 line main frame, including new protectors, cable racks, Telering ringing apparatus, operators chairs, etc. They also have purchased from the Stromberg-Carlson company sufficient cable, construction material, including messenger strand, protected and unprotected terminals, etc., to completely re-cable the entire plant. Included in their improvements was sufficient No. 12 copper wire together with creosoted poles to completely rebuild a toll line owned and operated by the telephone company between Tomball and Houston.

Incidentally, in order to keep up with the numerous installation orders it was

No. 105 Stromberg-Carlson Magneto Switchboard

found necessary to purchase fifty complete desk telephones. T. C. Thompson, better known as Tom Thompson, Stromberg-Carlson's genial representative in the State of Texas, assisted the telephone company in laying out their cable plant.

The telephone company is rebuilding their central office and by the time this article is published they will have a modern magneto exchange.

C. F. Hoffman is president of the Tomball Telephone company and William Stirz is plant superintendent. Both of these gentlemen have had a considerable number of years experience in the telephone business and felt as if the company should purchase only reliable material in making these improvements.

Where-to-Buy Section

For the convenience of readers of Telephone Engineer

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Exclusive telephone accounting since 1907.
Certified Public Accountants.
We install the well-known
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A Central Accounting Department.
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ACCOUNTING
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Specializing in Telephone Accounting
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Neon Lightning Arrester Units

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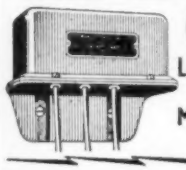

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STROMBERG EMPLOYMENT JUMPS

Number of workers employed at the Rochester, N. Y., plant of Stromberg-Carlson Telephone Manufacturing company has increased 25 per cent during the last few weeks as production of the company's new automobile radio got under way. The company reports orders on hand sufficient to keep the present increased force busy for some time to come.

This rise in employment, together with the 12½ per cent wage increase put into effect July 3, bespeaks very clearly the business outlook for the company, according to Wesley M. Angle, vice president and secretary. He says:

"The Stromberg - Carlson company takes great satisfaction in being able to announce an increase of approximately 25 per cent in its number of employed, not alone for the reason that orders on hand have made this increase possible, but also for the added purchasing power with such an increase in employment affords.

"We feel that the conditions which have made possible such increase in employment and wages are indicative of rapidly-approaching business normality."

BUYS NEW P.B.X.

The Veteran's Home at Danville, Ill., recently purchased a new Kellogg P.B.X. switchboard to add to its present Kellogg equipment. The original Kellogg P.B.X. equipment was purchased only two years ago. Since then, however, the home has grown rapidly and the telephone service has been so popular that many new stations have been put in. Consequently, a second Kellogg unit to line up with and match the original board was installed to keep pace with the growing traffic. The new position is wired for 100 lines and equipped with fifty. The simplicity and convenience of Kellogg equipment have been an important factor in making telephone service as popular as it is at the Veteran's Home.

POSITION WANTED

Married man desires position with telephone company. Has had fifteen years of experience in the telephone field, and can give excellent reference. Is willing to go anywhere. Write E. J. P., c/o Telephone Engineer.

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BELL OFFICIAL DIES

Charles E. Rikel, Jr., for many years a department head for the New York Telephone company, died July 26 at his home in Sea Cliff, L. I., N. Y.

TELEPHONE BOOTHS

Standard sizes, late style with "Fold In" doors. Mahogany or oak finish. $15.00 to $100.00. Details on request.

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Electrical Measuring Instruments . . .

They are the Telephone Man's most important tools. Like all tools, they suffer from wear and tear and accidental overloads.

Very seldom can these instruments be spared for more than a few days for periodical adjustment or repairs. For more than 17 years, we have specialized in repairing and testing all types and makes of electrical instruments.

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Forms for every need of every department.

A centralized accounting service at lowest rates.

MAINTENANCE PRACTICES

(*Continued from page* 14)

switchboard. In many tests it will take the place of more expensive continuity testing instruments.

How to Use Device

The helpful little testing device shown in Fig. 2 was made from a worn-out switchboard plug and a 24-volt switchboard lamp mounted inside of the plug after the tip and ring of the plug had been removed. The ring bushing was left in place. The ice pick point was then inserted in the ring bushing.

Contact between the lamp and the end of the steel test probe was made by cutting away some of the wood at the base of the lamp, exposing one of the lamp terminals, and then filing a flat place on one side of the steel probe which extends back into the plug so that it will slip over the exposed terminal and make a close contact with it.

A white lamp cap was inserted in the butt end of the plug. Nine feet of stranded copper tinsel cordage was used with a test clip at one end. The other end of the cord was soldered to the brass sleeve side of the plug. Thus 24 volts between the test clip and the point of the test probe causes the lamp to light.

This continuity tester has been found to be quite convenient for detecting the presence of battery, either across battery terminals or across busses. It will come in handy testing fuses and by placing it across line and supervisory lamps that do not light, a test is obtained which indicates whether or not the existing lamp is at fault. Many other practical uses of this clever testing device will no doubt occur to testmen as it will give a positive indication on all low resistance circuits—about 200 ohms or less—with a 24-volt battery.

DR. ARNOLD, BELL OFFICIAL, DIES

Harold De Forest Arnold, director of research of the Bell Telephone Laboratories, died at his home in Summit, N. J., July 10 of heart attack.

Dr. Arnold was born in Woodstock, Conn., September 3, 1883, and attended Wesleyan University, Conn., and University of Chicago, from which he received the Ph.D. degree in 1911. Then taking up research work for the Bell System he was one of the scientists who laid the foundation for what is now the Bell Telephone Laboratories, Inc.

Dr. Arnold held the John Scott medal for his work in vacuum tubes and the honorary degree of Doctor of Science from Wesleyan University. He was a member of Phi Beta Kappa, Sigma Psi, and Gamma Alpha fraternities, and of the American Institute of Electrical Engineers, the Franklin Institute, the American Chemical Society, and the American Association for the Advancement of Science. He was a fellow of American Physical Society.

John C Peaty, supervisor of plant and structures for the New York Telephone company, until his retirement recently, died July 7 at the age of 67.

Mr. Peaty was born in Brooklyn. He was a pioneer member of the First A. D. Democratic Club and a member of its board of directors. In 1907 he was the Democratic candidate for Assemblyman from the district.

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